
Simulation Games as a Method for Developing Entrepreneurial Competencies of the Young Generation

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Abstract:

Purpose: The aim of this article is to analyse the role of educational simulation games as an innovative didactic method supporting the development of entrepreneurial competencies of the young generation. The authors attempt to demonstrate how the use of business simulations can enhance the effectiveness of training in practical entrepreneurial skills, addressing the challenges posed by digitisation and evolving educational needs.

Design/Methodology/Approach: The study is theoretical and empirical in nature. The theoretical part includes a literature review and a classification of simulation games in the context of entrepreneurial education. The empirical part utilises the results of the Case Simulator project, implemented at the University of Gdansk, where the learning-by-doing method was applied in the didactic process. Data from the PISA 2022 report on the financial literacy of young people were also analysed as background for diagnosing educational needs.

Findings: The research indicates that the use of simulation games in the educational process results in a significant increase in the practical knowledge and entrepreneurial competencies of participants. In the Case Simulator project, a 55% increase in knowledge in practical areas was recorded, confirming the effectiveness of activation methods compared to traditional forms of teaching. Simulation games develop skills in strategic thinking, cooperation, communication and decision-making under conditions of risk and uncertainty.

Practical implications: The study's results confirm the need for a broader inclusion of simulation games in the curricula of economic and entrepreneurial subjects. The article points to the need to adapt teaching methodologies to the peculiarities of the digital generation, for whom interactivity, collaboration and immediate feedback (fun, friends, feedback) are key. It also recommends developing teachers' competencies in the use of activation methods.

Originality/value: The originality of the paper lies in the combination of theoretical analysis and empirical research results, which unequivocally confirm the effectiveness of simulation games in developing entrepreneurship, particularly among the young generation. The article contributes to the development of entrepreneurial didactics, demonstrating simulation games as an effective tool for supporting the training of future competencies and the practical preparation of young people for functioning in the digital economy.

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1. Introduction

The dynamic changes taking place in the modern world, related to the development of technology, digitisation and globalisation of economic processes, pose new challenges for education. Traditional teaching methods, based mainly on the transmission of theoretical knowledge, are increasingly proving insufficient in shaping the competences needed to function in a changing and complex socio-economic environment.

In this context, the development of entrepreneurial competences, including the ability to make decisions, solve problems, cooperate and react flexibly to changes, is of particular importance.

One of the methods that effectively supports the development of these competences is simulation games. Their essence is to replicate real decision-making situations in a safe learning environment, where participants can experiment, experience the consequences of their own actions, and learn from their mistakes. Simulation games are based on the principle of *learning by doing*, which enables active processing of knowledge and its practical application.

The aim of this article is to present the potential of simulation games as a didactic method fostering the development of entrepreneurial competences among the young generation and to indicate the possibility of their broader use in the educational process.

2. Literature Review

2.1 Classification of Entrepreneurial Competences

The concept of entrepreneurial competence has been intensively researched in recent decades and is a key competence in European education systems, attributed crucial importance in the lifelong learning process. These competences are defined as a complex array of knowledge, skills and attitudes necessary for an individual to function effectively in private, social and professional life (Świątek *et al.*, 2025; Ratković *et al.*, 2022; Antonia *et al.*, 2023).

According to the Recommendation of the European Parliament and of the Council (2018), entrepreneurship refers to a person's ability to put ideas into action, encompassing creativity, innovation, and a willingness to take risks. It also implies the ability to plan ventures and achieve desired goals.

The literature employs classifications that account for the multidimensional nature of entrepreneurship. One of the most frequently cited typologies, based on the research of Mitchelmore and Rowley (2010), divides competences into three main groups, which are interrelated: personality (social), behavioural (personal) and managerial (functional) (Piróg, 2015).

Personal (social) - concerns the sphere of contact with other people and behaviour in the environment. They include: self-confidence, sense of locus of control, tolerance, quality concern, coping with difficulties, self-presentation and self-evaluation skills. They are critical in the age of technological innovation civilisation, as they are related to building positive interpersonal relationships.

Behavioural (personal) - related to entrepreneurial attitude and individual predisposition to act. They include assertiveness, initiative, creativity, willingness and ability to take risks, vitality and energy, a need for autonomy, and perseverance. They shape a person's personal disposition to act.

Managerial (functional) - focus on the ability to manage and achieve goals, use knowledge and resources. They include interpersonal communication, goal formulation and persuasion skills, information seeking, problem-solving, systematic planning, and technical familiarity. Essential for managing projects and ventures, as well as identifying opportunities and assessing one's own strengths and weaknesses.

The development of entrepreneurial competence is a broad concept. In the literature on entrepreneurship and the development of professional competences, there is also a classification that includes (Wawer, 2013):

Managerial and functional (hard) competences relating to knowledge, analytical, technical and job-related skills. Knowledge in finance and accounting, management,

and the fundamentals of commerce and e-business is of the most significant value. The Case Simulator study (Bizon, 2013) showed that students rated their skills (e.g. courage, communication skills) clearly higher than their hard knowledge regarding start-up procedures or how to obtain funding.

Social and metacompetences (soft), including work behaviour, contacts with other people, cooperation skills, pursuing common goals, and conflict resolution. Metacompetences involve the ability to learn, reflect and cope with stress and uncertainty.

2.2 Theoretical Foundations of Simulation Games as Teaching Methods

Simulation games (also known as decision-making games, management games, simulation games or simulation models) are defined as dynamic models whose elements are people playing selected or assigned roles described by a scenario. During each stage of the game, decisions are made that affect other parts of the model, including those of the other players. Each decision needs to be reviewed and its consequences tested, which forms the basis for the next decision (Balcerak and Pelech, 2000).

An adequately designed simulation game, which is a valuable tool for education and competence development, should contain the following key elements (Wawer, 2013):

- A clearly articulated objective.
- Definition of behaviours that are desirable and undesirable, as well as their consequences.
- An element of competition.
- A high level of interaction between participants.
- Clearly defined end and expected outcome (measure of victory).

Business simulations are a participative learning method that aims to develop participants' decision-making awareness, motivation and analytical competence. This method enables the creation of problem situations (challenges) that require participants to develop and implement appropriate solutions in conditions closely resembling real-life scenarios.

The most significant advantage of business simulations is that participants directly experience the consequences of their own decisions, which fosters the learning process through experience (learning by doing) and reflection on the consequences of their actions. Simulation games involve recreating complex decision-making situations, imitating real-world economic or social processes. Each action taken by the participant influences the simulation's further course, allowing for the observation of cause-and-effect relationships and the transfer of acquired experience to professional practice.

Simulation games can be classified according to their didactic purpose into (Czyżewska *et al.*, 2018):

- Affective games: whose purpose is to shape specific skills, e.g. decision-making, negotiation, leadership.
- Cognitive games: whose primary goal is to cause an increase in knowledge of the mapped system.

Simulation games are classified by W. Okoń (1998) as a method of independent knowledge pursuit, based on creative cognitive activity that involves problem-solving.

2.3 The Importance of Simulation Games in the Development of Entrepreneurship

A simulation game, being a combination of a model of reality, game rules, and roles assigned to participants, influences their awareness and motivation, generating challenges for which they must work out solutions. Participation in a game requires a high level of commitment, cooperation, and effective interpersonal communication.

Business simulations are beneficial because:

- They combine theory and practice: participants can apply the acquired theoretical knowledge in practice. Positive decisions by participants yield positive outcomes, while incorrect choices lead to negative consequences. Didactic simulations provide an understanding of the processes and mechanisms of action, focusing on how the goal is achieved rather than just the result itself.
- They develop key skills: in surveys, students indicated that the most important skills acquired were strategic thinking (52% considered very important, 48% important, no one considered less important or unimportant) and information analysis (48% very important, 52% important) (Bizon and Poszewiecki, 2013; Kuczera, 2021). Other key competences include teamwork, interpersonal communication, problem solving and taking responsibility. Simulations also allow for the development of the ability to adapt to new situations.
- They shape entrepreneurial attitudes: participants learn to recognise opportunities, evaluate and take risks. Losing in a game is a source of learning and an incentive to analyse failures. It is also crucial to plan and enact business strategies, and to consider sustainability rather than just profit maximisation.

For the effectiveness of modern business simulations its design is crucial considering:

- Team-based implementation supported by communication tools.
- Competition based on performance rankings, which is in line with young people's demand for interaction and immediate feedback.
- Provision of feedback (reports and statistics) almost as soon as decisions are made, which enables rapid correction of strategies.

2.3 Context and Challenges of Contemporary Education

The development of the information society and the widespread emergence of new technologies require changes in educational processes. Financial and economic education plays a crucial role in equipping young people with the skills necessary to understand financial services and to make informed decisions in the world of money. As an attractive audience for online financial services and e-commerce, young people have constant access to digital technologies (Sitek and Wasilewska, 2024).

Entrepreneurial competence is recognised in European education systems as one of the key competences in lifelong learning (Rachwał *et al.*, 2024). However, for years, a gap has existed between employers' expectations and graduates' skills, particularly in terms of soft skills and practical preparation for the labour market. Although programmes aimed at developing entrepreneurial traits, such as independence and decision-making skills, are implemented in Poland, adequate competences in the selection and implementation of ideas are mainly lacking (Bizon and Poszewiecki, 2013).

In light of the IT revolution and rapid access to data, effective training methods should combine modern technologies, which are integral to the everyday functioning of young people, with practical issues, i.e., real problems arising in business reality. In this context, educational simulation games have emerged as one of the most effective solutions for active learning (Takemoto and Oe, 2021; Bhullar and Aggarwal, 2022; Chen *et al.*, 2023).

3. Methodology

The study's methodology is based on the analysis of innovative teaching methods, with a particular focus on simulation games that utilise the principle of learning by doing. The research approach is analytical and descriptive, combining elements of literature review, analysis of educational reports and interpretation of empirical findings.

The empirical part is based on the results of the Case Simulator project, carried out between 2011 and 2013 at the University of Gdańsk. This project exemplifies the application of simulation games in academic education and provides data confirming

the effectiveness of this method in developing entrepreneurial competencies. The results of the project were analysed in the context of its impact on the growth of practical knowledge, decision-making skills and entrepreneurial attitudes of the participants.

The research material is complemented by an analysis of secondary data, including the results of the PISA 2022 financial literacy survey, which allows the effectiveness of entrepreneurial education to be related to international standards and comparisons of young people's economic competence. This data was used as a context for contemporary educational challenges, highlighting the need to develop teaching methods that are based on student activity and practical experience.

In addition, the methodology includes a content analysis of the report "Economic education in secondary schools from the perspective of business and management teachers. A research report" (Rachwał *et al.*, 2024), which is a source of information on the state of economic education in Poland and on the possibilities of implementing activating methods in school practice. The report enables the linking of simulation study conclusions to the real needs of the education system.

The entire study is based on desk research, i.e. the analysis of available empirical data, reports and scientific studies. The adopted methodology enables the linking of empirical research results with the educational context and the assessment of the potential of simulation games as a tool supporting the development of entrepreneurial competences among the young generation.

4. Discussion

4.1 Educational Challenges and the Results of the PISA 2022 Financial Literacy Survey

The results of the study 'Youth in the World of Money. Results of the PISA 2022 financial literacy survey' (Sitek and Wasilewska, 2024) provide essential arguments for the need to intensify practical economic and entrepreneurial education. The study reveals that, in terms of financial literacy, Polish 15-year-olds achieved an average score of 506 points, surpassing the average for participating OECD countries (498 points).

Nevertheless, there was a 14-point decrease in the average score compared to 2018. Key observations highlight variations in achievement by school type and the presence of gaps in students' subject competencies. Significant disparities were found, especially between students in general secondary schools (highest scores, 541 points) and students in lower secondary industry schools (lowest scores, 409 points).

Almost half of the students in lower secondary trade schools do not reach a level of financial knowledge and skills that enables them to make conscious, safe, and

rational economic decisions. Pupils declare knowledge of basic concepts (budget, credit, entrepreneur), but show limited knowledge of terms with a higher degree of specialisation, such as dividend, diversification or compound interest.

The results of the PISA 2022 survey also indicate that Polish 15-year-olds are highly active in the digital space, with as many as 92% of them shopping online and 72% making payments using a smartphone (Sitek and Wasilewska, 2024). Such intensive engagement in the area of digital finance implies the need to develop the ability to critically assess financial risks, including awareness of the risks arising from, among other things, inadequate protection of personal data (Sitek and Wasilewska, 2024).

Young people are proficient in the environment of new technologies; by participating in business simulations, they can experiment with business and financial strategies in a safe, virtual environment, which is crucial for developing the ability to assess and take risks, as well as resilience in the face of failure. The findings confirm that young people are particularly susceptible to peer influence in matters related to consumer and financial decisions.

As many as 51% of Polish 15-year-olds admitted that, influenced by the presence of friends, they spend more than they would like. Furthermore, 43% of respondents buy products recommended by friends (Sitek and Wasilewska, 2024). This strong role of the social factor in young people's everyday decisions justifies the use of group exercises and simulations that model team interactions, including negotiation and joint decision-making.

Despite the proven effectiveness of simulations, their widespread use faces barriers, as evidenced in a report on a study of economics education in secondary schools from the teachers' perspective. The results of the survey indicate that teachers of the subject Business and Management (B&M) are generally optimistic about the usefulness of computer simulations and didactic games in the educational process.

More than half of the respondents considered these tools to be of didactic value, with 23% describing their usefulness as 'very good' and 30% as 'good' (Rachwał *et al.*, 2024). These results confirm teachers' growing awareness of the potential of activation methods in economic education.

At the same time, it should be emphasised that the evaluation of the availability of simulations and computer teaching games is lower than the evaluation of their usefulness. A total of 30% of FDI and Basics of Entrepreneurship (BE) teachers described the availability of these tools as 'bad' or 'very bad'.

These results are consistent with observations from surveys of teachers of other subjects, in which simulations and teaching games were rated as the least accessible of all the educational materials analysed. These data indicate that despite the positive

attitude towards simulation methods and their acknowledged didactic value, teachers face significant barriers of an organisational and technical nature.

The limited availability of appropriate tools and insufficient methodological support hinder the broader implementation of games and simulations in school practice. In addition, almost half of the surveyed teachers reported a need to improve their competencies in using a variety of teaching methods, including techniques that involve students, practical teaching, and case studies and simulations.

It is also worth noting that the teaching of economic content in secondary schools remains dominated by the traditional model of knowledge transfer, which primarily relies on lectures or presentations. This is despite the declared appreciation of activating methods such as didactic games, simulations or case studies. This indicates a discrepancy between the declared support for innovative teaching methods and the actual didactic practices, which may result from both equipment and curriculum limitations, as well as insufficient methodological preparation of teachers.

4.2 Didactics and the Specifics of the Young Generation (3F)

Contemporary didactics of the young generation requires teachers and educational institutions to take complete account of the specificity of the environment in which students function - their experiences, expectations and technological competences. The young generation, in the context of dynamic socio-technological changes and the changing role of education, is referred to as the 3F (*fun, friends, feedback*) generation (Kołodziejczyk, 2013).

These three elements are the primary demands that should be considered in the modern educational process, particularly in terms of utilising innovative teaching tools. Generation 3F expects the inclusion of playful (*fun*) elements in education, which increase the attractiveness and effectiveness of learning, and the adaptation of methods to digital reality.

This translates into the need to introduce forms of education that combine technologies that are intrinsic to their everyday functioning with practical business problems (Zhang *et al.*, 2024; Chettiar *et al.*, 2024). Students formulate expectations regarding the creative nature of the tasks and the integration of elements related to topics that appeal to young people, including popular series, films, or games (Jasinski and Kopacz, 2023).

In the learning process, they emphasise the importance of interpersonal relationships (*friends*), as they find activities based on cooperation and interaction engaging and competition motivating. Generation 3F also has expectations for feedback regarding performance. They prefer a fast-learning process and immediate verification of their own achievements (Wawer, 2013).

Simulation games, in contrast to traditional methods, allow for rapid correction of strategies through the provision of reports and statistics, almost immediately after a decision has been made. In simulations, good actions are rewarded with a positive outcome, and bad actions with a negative result, allowing the participant to experience the consequences of their decision directly.

The nature of the 3F generation is to seek engagement, social interaction and continuous evaluation of progress. Methods such as simulation games effectively address these needs by offering an interactive, digital environment that combines learning with experience and immediate feedback.

4.3 Realising the Concept of Learning by Doing in Games and Simulations

For too long, the education system has focused on content, forgetting that people learn best while performing an activity, i.e. in the process of gaining experience. The low dynamics and routine nature of traditional teaching methods limit students' involvement and do not foster their cognitive potential, creativity or independent thinking.

The use of schematic forms of knowledge transmission, based mainly on the passive assimilation of content, hinders the development of key competences such as critical thinking, cooperation, and problem-solving. As a result, the didactic process becomes less effective and does not respond to the needs of a modern student functioning in a dynamically changing social and professional environment.

The concept of learning by doing, which goes hand in hand with simulation methods, is part of self-directed learning methods, which are based on creative problem-solving cognitive activity. Learning by doing may play a crucial role in building confidence in one's own effectiveness (so-called mastery experiences), i.e., an inner conviction that one can cope with tasks, which stems from previous positive experiences in which the individual has proven themselves (Klucznik-Törő, 2012).

In the context of simulation games as well as case studies, action learning has the following practical dimensions (Bizon and Poszewiecki, 2013):

- The participant himself experiences the consequences of right and wrong decisions, and as a result receives a reward or faces failure. Observing the sources of success or failure shapes behaviour in the real world.
- Players are obliged to analyse their actions in a recurring cycle systematically. In this way, in a safe, virtual environment, they form correct habits and reduce the number of mistakes they make, while eliminating the risk of actual errors in the real environment.
- Participants can apply the acquired theoretical knowledge in practice. Simulations focus on transferring knowledge acquired in the virtual world to real-life problem situations.

Learning by doing in games requires continuous decision-making, verifying decisions and checking their consequences, which becomes the basis for the next decision. This leads to the development of complex thinking, reasoning and decision-making skills. The concept of learning by doing is key to developing the competencies of the future, including entrepreneurship.

The development of entrepreneurship occurs through the right organisational culture (such as a school or university) and not just through attending lessons or courses. Taking initiative and entrepreneurship means a person's ability to put ideas into action, being creative, innovative and taking risks. All these elements are exercised through active action in a simulation.

This concept aligns with Dale's Cone of Experience (Dale, 1946). Active learning, including practice through action and the immediate use of acquired knowledge, contributes most to learning and memorisation. The Cone placed different educational media and methods on a continuum, ranging from the most concrete experiences at the bottom to the most abstract at the top. Learners moving from direct and purposeful experiences to verbal symbols become spectators rather than participants.

The Case Simulator project, conducted at the University of Gdańsk, aimed to enhance skills in developing entrepreneurial attitudes among final-year students. The overriding intention was to translate these competences into an improvement in their position on the labour market, including becoming potential employers.

The Case Simulator project provided empirical evidence (Bizon and Poszewiecki, 2013):

- Students participating in activities using simulations and case studies scored significantly higher in the area of practical knowledge related to entrepreneurship than the control group.
- The most significant knowledge gain was recorded in the practical issues devoted to entrepreneurship (degree of gain close to 55%).
- Even non-business students (who are a group often overlooked for support) significantly improved their knowledge, and their results in the final tests showed a clear difference in favour of the project participants compared to the control group.

These results confirm that an innovative form of knowledge transfer, based on practical action, is an effective tool for increasing knowledge and skills related to the practical side of running a business. The concept of learning by doing, including its implementation in simulated conditions, can be considered the core of innovative educational methods, as it transforms a passive process of absorbing information into an active and motivating experience in which the participant, as in real life, learns through trial, error and immediate feedback, leading to a deeper understanding and lasting mastery of skills.

5. Conclusions and Recommendations

5.1 Developing Key Entrepreneurial Competences

Entrepreneurial development is a complex process, involving knowledge transfer, the development of practical skills and the building of attitudes that foster active action and self-confidence. This process requires the simultaneous development of both cognitive, social and emotional competences.

An entrepreneurial mindset requires the courage to make decisions, the readiness to act in uncertain situations, and the ability to overcome difficulties. It is not necessary to have many years of professional experience, but organisational competence, motivation and the ability to learn are crucial. A significant barrier to entrepreneurial action is the fear of failure.

The education system can play a key role in reducing this through the use of practical methods, such as simulations and educational games, which allow failure to be experienced under controlled conditions and teach people to learn constructive lessons.

Developing practical knowledge and entrepreneurial competencies is a key challenge in modern education, as it aims to better prepare young people for the dynamically changing labour market and for active and informed participation in economic life. Effective methods of developing these competences must combine theory and practice and be based on activation methods that meet the needs of the modern message receiver.

The business simulations described are considered one of the most effective tools supporting entrepreneurship education, as they provide a comprehensive view of an enterprise's functioning and allow participants to assume the role of managers making decisions in realistic market conditions.

Their key advantage is that participants experience the consequences of their own choices for themselves, learning by analysing the implications and reflecting on mistakes made. Failure, in this context, becomes part of the learning process, mobilising them to improve their actions.

The results of PISA 2022 clearly emphasise the need to strengthen economic education by developing financial and entrepreneurial competencies in a practical context.

Despite having a relatively good level of declarative knowledge, young people often fail to apply it in situations that require risk assessment, financial planning, or responsible economic decision-making. Simulation games can bridge this gap by providing a connection between theory and real-life skills.

The report 'Economic education in secondary schools' confirms the need to modernise teaching methods, including increasing the use of activation methods and interactive forms of teaching. Simulation games can play a crucial role in this change, enabling teachers to achieve their educational objectives through practical experience and student collaboration. Curricula should support the development of a sense of agency, autonomy and confidence.

Research indicates that students often rate their personal skills higher than their level of practical knowledge, suggesting the need to balance these two aspects of entrepreneurial development. In the teaching process, particular emphasis should be placed on developing cognitive competences such as critical thinking, reasoning, decision-making and learning.

It is also essential to develop the ability to select and critically evaluate information, which becomes particularly important in a digital environment characterised by data overload. Educational programmes should focus on developing the skills in which the most significant deficiencies are observed, such as planning, work organisation, communication and the ability to learn. In the Polish context, entrepreneurs particularly often point to an insufficient level of communication competence and difficulties in independent learning and adaptation to market changes.

The use of simulation games is part of shaping the competences of the future, combining economic knowledge with social, digital and decision-making skills. In this sense, this method responds to the needs of the contemporary labour market and a society based on knowledge and innovation.

In light of the discussion presented, the authors recommend that it be introduced at different levels of education, especially for young people. The use of simulation games in education is a response to the needs of a modern school and a knowledge-based economy.

From the perspective of further research, it seems justified to deepen the analysis of the impact of educational simulations on the long-term development of entrepreneurial competencies and to develop models for implementing these methods in diverse educational contexts.

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