USING BUSINESS SIMULATORS IN THE EDUCATIONAL PROCESS STEM-EDUCATION OF UKRAINE AS A DIRECTION OF PROFESSIONAL ORIENTATION OF YOUNG PEOPLE

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Abstract

Background and Objective: Educational institutions pay attention to improving the educational process by gradually transferring classes to an active didactic format and activating the process using innovative methods and modern educational technologies, namely case studies, business games, trainings, brainstorming techniques, and so on. This allowed us to attract job seekers education of the out-of-school educational institution "Center for Scientific and Technical Creativity of Youth «Polet»" of the Zaporizhzhia City Council of the Zaporozhye region for creative communication not only in the classroom, but also in a remote format; teach to work in a team; increase the efficiency of perception of theoretical material on economics and acquire practical skills in enterprise management.

Study Design/Materials and Methods: The methods used include the literature review (theory) as well as description of experience of the authors in the given field.

Results: The result of the research is to organize the educational process of institutions of higher and extracurricular education and analyze the effectiveness of business simulation training in the professional training of future economists.

Practical implications: The practical implications focuses on covering the process of introducing business simulation technologies into the educational process of educational institutions and analyze the effectiveness of using business simulations in the educational process.

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Based on the purpose of the study, the authors set and considered the following tasks:

1. Prerequisites for using a competency-based approach in the educational process;
2. Defining the essence of the term "business simulator";
3. Stages of development of business games and simulations;
4. Analysis of the market for business games and simulations;
5. Calculating the effectiveness of using business simulators in the educational process;
6. Recommendations for improving the educational process using business simulation technologies.

Conclusion and summary: Simulation learning is a powerful tool for modern higher and extracurricular education. This has found application in the educational processes out-of-school educational institution "Center for Scientific and Technical Creativity of Youth «Polet»". Development simulation forms of learning through modeling in the educational process of relationships and conditions of real work of a virtual enterprise increase the competitiveness of applicants for education in the labor market.

Keywords: higher education; after-school education, extracurricular education; business simulator; practical skills.

JEL classification: I23

Paper type: Research

1. Introduction

Prerequisites for using a competency-based approach in the educational process

The main feature of the competence approach in comparison with the traditional one is the shift of emphasis from the accumulation of normatively defined knowledge, skills and abilities to the formation and development of students ability to practically act, apply individual techniques and experience of successful actions in situations of professional activity and social practice. The main thing is not the subject that we teach, but the personality that we form. It is not the subject that forms the personality, but the teacher through his activities related to the study of the subject (CESIM, *What is a business simulation*).

Modern school education should fulfill its mission-to prepare students for life in the open world, and at the same time instill in them a patriotic sense of their own identity. Currently, the reform of the educational sector of our state continues. The ideology of this reform is the concept of "New Ukrainian School", adopted by the Board of the Ministry of Education and Science of Ukraine on 19.10.2016 (LiCO, *Modeling and business games for training)*.

Some scientists, namely I. Zimnaya, who deals with the problems of competence, distinguish 3 stages of the formation of the competence approach in education (LiCO, *Modeling and business games for training)*:

First stage (1960–1970) is marked by the introduction of a scientific apparatus and the creation of prerequisites for distinguishing the concepts of competence and competence;

Second stage (1970–1990) is characterized by the use of the categories competence and competence in the theory and practice of training, communication, and analysis of the professionalism of specialists in management;

Third stage (1990 to the present day) is characterized by the study of competence as a scientific category in relation to education.

The competence-based approach is closely related to such approaches to learning as (CESIM, *What is a business simulation*):

— personality-oriented (because it needs to transform the content of education, turning it from a model for "everyone" to the subjective property of one student, that they can be measured);
— activity-based (because it can only be implemented in an activity, i.e. in the process of performing a specific set of actions by a specific student).

In Ukrainian legislation, the list of competencies was first formed in the Law of Ukraine «On Education» of September 5, 2017 No. 2145-VIII (Ukraine, 2017).

Achieving this goal is ensured by developing the key competencies that every modern person needs for successful life: (Ukraine, 2017)

— fluency in the state language;
— ability to communicate in their native language (if different from the state language) and foreign languages;
— mathematical competence;
— competencies in natural sciences, engineering and technology;
— innovativeness;
— environmental competence;
— information and communication competence;
— lifelong learning;
— civil and social competencies related to the ideas of democracy, justice, equality, human rights, well-being and healthy lifestyle, with an awareness of equal rights and opportunities;
— cultural competence;
— entrepreneurship and financial literacy;
— other competencies provided for in the education standard.

Common to all competencies are the following skills: reading with understanding, ability to express your thoughts orally and in writing, critical and systematic thinking, ability to logically justify a position, creativity, initiative, ability to constructively manage emotions, assess risks, make decisions, solve problems, ability to cooperate with other people.

The analysis of recent studies confirms that the problem of using the competence approach in education has become relevant in modern pedagogy. The theory of the competence approach was developed and presented in the works of foreign scientists: G. Bader, D. Mertens, B. Oskarson, A. Shelten.

Ukrainian perspectives of the competence approach in modern education were studied by scientists I. Bekh, N. Bibik, L. Vashchenko, I. Ermakov, A. Lapsha, A. Ovcharuk, L. Parashchenko, A. Pometun, A. Savchenko, S. Trubacheva and others.

According to A. Pometun, competence is a complex integrated characteristic of a person, which is understood as a set of knowledge, skills, attitudes that allow you to effectively conduct activities or perform certain functions, providing a solution to the problem of achieving certain standards in the field of profession or type of activity (CESIM, *What is a business simulation*).

2. Basic Theory

Defining the essence of the term «business simulator»

Business simulation – an interactive model of an economic system that, according to its internal conditions, is as close as possible to the corresponding real economic unit: a division or the entire enterprise, industry, or state (Wikipedia, *Business simulation*).

Business simulation business simulation is a state-of-the-art technology for evaluating and developing personnel based on modeling real business processes that are as close as possible to the conditions of a particular organization and allow participants to gain experience in solving complex management problems in artificial conditions (ONPU, *Scan-copy of...*).

Business simulation – This is an experience-based learning tool where participants learn by running a virtual business in an interactive, risk-free, and realistic environment. Business simulators help you practice and improve business skills such as business acumen, financial and market analysis, operations, decision making, problem solving, teamwork, communication, and leadership.

Business simulation – This is a thematic business game that models the business environment as close as possible to the realities of a particular company (Oleksandrivna, 2021).

Business modeling – This is a simulation that is used for business training, training, or analysis. This can be a script or a numeric one. Most business simulators are used to train and develop business acumen. Training objectives include: strategic thinking, decision making, problem solving, financial analysis, market analysis, operations, teamwork, and leadership (Wiki5.ru, *Business simulation*).

Business simulation – It has a clearly defined educational goal – the development of practical skills and competencies by participants. This makes it qualitatively different from other software products, in particular economic games, which mostly belong to the entertainment sector.

The interactive nature of business simulations provides ample opportunities for participants to gain and develop their primary skills and competencies in managing a company: building a strategy, solving tactical and operational tasks – that is, learning to do everything that can only be learned in practice. The interactive nature of a business simulation bears the hallmarks of a game .

Business simulations can be classified according to many criteria.

By **the Biggs taxonomy** (Wikipedia, *Business simulation*) they can be divided into the following:

— Designed to simulate the activities of an entire enterprise (**whole foods**) or to focus on making a decision in a narrow functional area (**functional features**) – marketing, manufacturing, finance, and so on.
— Availability (**competitive services**) or absence (**non-competitive products**) the relationship between the decisions of one participant and the results of others.
— Availability (**interactive features**) or absence (**not interactive**) in the simulation of the administrator role.
— Aimed at imitating the economic processes of a particular industry (**industry-specific features**) or general (**general**) economic processes.
— By the number of participants simultaneously participating in the simulation (**command lines** and **individual orders**).
— Decision making and its outcome in the simulation are probabilistic (**stochastic parameters**) or a specific one (**deterministic values**) character.
— Ability to choose the complexity of the economic model: **no choice** of economic model; **availability of a choice** of difficulties in the simulation.
— Size of the period that is selected for modeling: **quarter, day, year** and so on.

Stages of development of business games and simulations

Over the past decade, many forms of e-learning have emerged, from webinars and video courses to virtual worlds and simulation games. The most effective of these forms are games and simulations.

Stages of development of business games and simulations (LiCO, *Modeling and business games for training)*:

From 1955 to 1963 – Creation and development of games where calculations are performed manually.

From 1962 to 1968 – Creation of business games in which calculations are done using a computer, and increase the results published in commercial sources.

From 1966 to 1985 – The period of the fastest growth of games in which calculations are done using a computer, and a significant increase in the complexity of business games.

From 1984 to 2000 – A period of increasing the number of games where calculations are performed using a PC, and the development of additional tools to help make decisions during business games.

1998 to present – The period of increasing the availability of business games via the Internet, conducting games through central servers, creating business simulations.

The National Institute for Continuing Education (Great Britain) in one of its studies derived the formula: "We only remember 20% of what we read, and up to 90% of what we read, saw, heard, and did, that is, when we gained experience through action". In foreign literature, such training is called "learning by doing" is shown in Figure 1. (Nychalko, 2017)

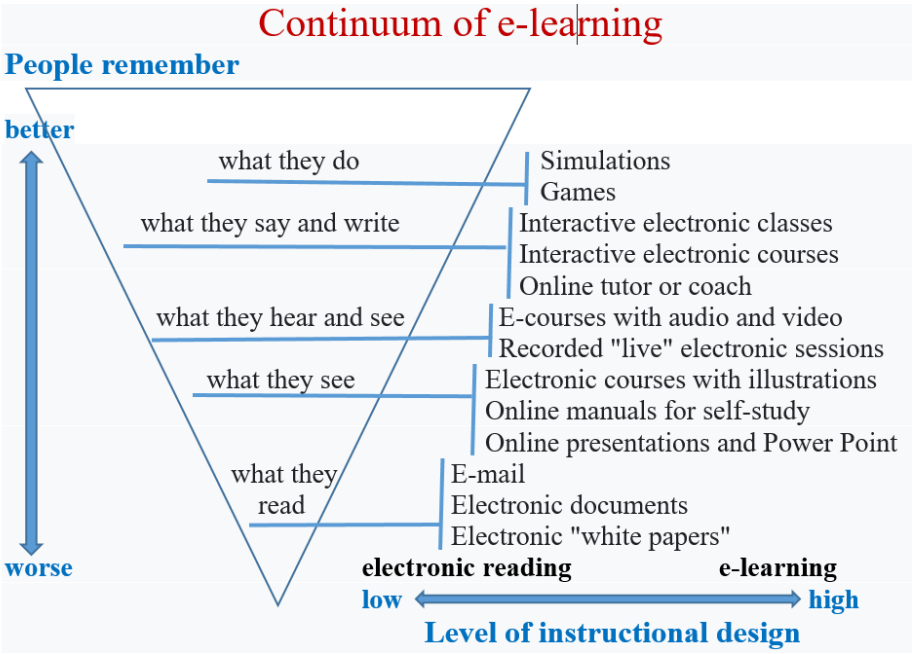

Figure 1. Components "Learning by doing"
Source: (KNEU, 2021)

It is not surprising that students remember little of what they were taught – most of the time they take a passive position in learning. The problem is even more acute in the field of education. Unfortunately, in the Russian educational environ-

ment, many still believe that education should be limited only to reading texts and passing tests. Such views are at least ten years out of date.

The main reason for the popularity of business simulations, according to developers, is that they can teach things that cannot be mastered through lectures, case studies, or even visiting real companies. «In games, students are immersed in ambiguous and / or contradictory situations that force them to think strategically, make important decisions and see the consequences of their own actions, and, consequently, learn from their own mistakes.»

3. Methodology

Analysis of the market for business games and simulations

During all this time, business simulations were used in Ukraine, mainly by Western and Russian companies. It was only in October 2011 that the KINT Intelligent Technologies Company announced the launch of the online training business simulation ViAL+, which is positioned as the first Ukrainian training simulation of an enterprise with a real competitive environment (KINT, *ViAL+ business simulation as the latest educational tool*).

The list of business simulation software products is given in Table 1. (Wikipedia, *Business simulation*).

Business simulations are one of the most effective educational technologies, as they allow participants to gain skills, competencies and practical experience in the learning process. That is why they are widely used in the educational process of many universities and business schools around the world.

Simulation games based on business simulations have a number of advantages: (Wikipedia, *Business Simulation*).

— Risk-free zone – mistakes in the game will not lead to the collapse of the business;
— Change the scale – you can take different positions in the company hierarchy: from an economist to a top manager;
— Improving financial literacy – getting new knowledge in an innovative format;
— Teamwork – improve communication and interaction skills within the team.

Table 1. List of software products with business simulations

Product Name, Contact Information	Date of creation, author company	Scope direction and usage	Main Features
ViAL+ http://www.kint.com.ua	2008–2011 Pyotr Banshchikov, Alexander Grishchenko, Vitaliy Pazdri; KINT Intelligent Technology Company	formation of skills in managing economic processes at the enterprise; strategic management; interactive trainings for individuals and legal entities	− large-scale simulation of the company's performance in the market environment; − it is designed for participants to acquire practical skills and competencies in managing economic processes at the enterprise; − it is based on the market of dairy products with conditions that meet the existing Ukrainian market for these products; − the virtual company has 5 main divisions: marketing and sales, production, personnel, financial and accounting; − realistic, "live", dynamic competitive environment; − broad methodological and organizational support; − a clear program interactive training; individual and team participation is possible; − unlimited number of participation sessions
Business Mania http://bizmania.ru/	2008, Alexey and Yuri Kuznetsov together with MediaMir	online economic game	− the game space is divided into two realms: "Light" (a light training version) and "O" (a professional realm for experienced players); − the player manages joint-stock companies and enterprises, collaborates and competes with other players, creating new products and exploring new markets

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Rashka http://www.rashka.ru/	2005, Finam Investment Holding	browser-based massively multiplayer online role-playing game	− implementation of the securities market modeling mechanism; − players create commercial enterprises by buying land, houses, factories; enterprises that produce various products invented by players, and which are sold in stores; − there is a banking system; − 3 branches of government are implemented: the parliament, the court, and the executive branch
Virtonomics virtonomica.ru	2003, Alexey Kuznetsov, GAMERFLOT TRADING Ltd	multiplayer strategic browser-based business game	− big business simulator; − an online economic game; − several dozen branches of the economy, more than 100 different products are presented; − various participants take part; − a participant registers and develops their own business (s); − a platform for testing various business strategies
FAST (Financial Analysis and Security Trading)	early 90's, Carnegie Mellon University Business School (Pittsburgh, USA), Ukraine offers MIM-Kiev	computer simulation of exchange trading	− business simulation of the stock market; − modeling of electronic trading on the basis of international standards and rules; at the end of the program, students are given the particular tasks to be solved tasks; − certificate of the Academy of National Economy on advanced training; − International certificate from Carnegie Mellon University (USA)

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GMC (Global Management Challenge) Championship www.gmcua.com www.gmc.in.ua	1980, Luis Alves Costa, GLOBAL MANAGEMENT CHALLENGE	strategic management use as a competition and training for large companies	− reflection of the financial model of an international manufacturing company; − a tool for evaluating and training personnel; − teams compete for the maximum share price of the company; − the team consists of 3–5 participants; − making more than 60 strategic decisions; − management decisions of participating teams are processed simultaneously by software that takes into account limited resources and market demand, as well as real-time competition between teams; − takes place in 36 countries
MARKSTRAT http://www.stratxsimulations.com, http://www.mim.kiev.ua/about/citt/games/	1974–1977, INSEAD French Business School, Lovanium International Management Center (Brussels, Belgium), offers MIM-Kiev in Ukraine	strategic marketing business simulation	− participants in the marketing simulation act as top managers of a manufacturing company that has been operating in an intense competitive environment for 6–12 years; − risk-free platform for testing theory and decision-making; testing the action of competitive forces, sales effects, distribution building, advertising campaign, R&D; − management and decision-making industries: market segmentation, product strategies, marketing complex, R&D, finance, personnel, production, distribution (sales), market (marketing) research
Global Management Game (International Management Game) and http://bs.krok.edu.ua/	1957, Carnegie Mellon University Interactive Computer Simulation Center, USA	business simulation of enterprise management, unofficial world business management championship	− simulates the company's performance in an international competitive environment; − it is taught in international and local formats; − teams of participants develop adaptive competitive strategies for the company's development and implement them during 2–3 virtual years, making strategic decisions on marketing, production, finance and development

Source: own study

Serious games are the most difficult form of e-learning to create. In order for the game to be successful in pedagogical terms, a number of conditions must be met. So, in the book "Why video games can teach us", Professor James Paul Gee of the New York University of Wisconsin (CESIM, *What is a business simulation*) suggests 36 principles that are considered desirable for their application in the learning process, and which can only be implemented in the context of the game:

1. The principle of student activity, critical attitude to the material: interest in the game, as a rule, is higher than before any traditional type of training.
2. Design principle: Design is seen as an important aspect of learning: any game, even the simplest, is better than a well-designed text.
3. Semiotics principle: students ' understanding of complex environments and relationships.
4. The principle of semiotic domains: collaborative learning with other people.
5. The goal of thinking principle: Students learn to see the relationships between different worlds and events.
6. The principle of a "psychosocial moratorium": students take on risks, learn from mistakes, and learn much faster than with traditional methods of learning.
7. The principle of responsible learning: students become more responsible because they are part of a group of like-minded people in which they all share a common identity.
8. Identity principle: Virtual identity is just as important as real identity. This improves the self-esteem and self-awareness of those who study.
9. Self-discovery Principle: Players learn to learn through learning strategies that suit them best.
10. The principle of increasing intensity over time: players receive a large amount of feedback, learning in real time what they are doing or not doing.
11. The principle of achievement: people independently set goals that are feasible for themselves, achieving them and receiving meaningful rewards for this.
12. The principle of practicality: achieving success is possible only through constant practice and application of the acquired knowledge, skills and abilities.
13. The principle of continuous learning: learning never stops, with progress you need to acquire new skills.
14. The principle of "competence level": those who study are pushed out of their comfort zone and into a zone of mild discomfort, where goals can be achieved with noticeable but not exhausting effort.
15. Research principle: a student should learn by constantly exploring new paths – trying, making mistakes, and trying again.
16. The principle of multiple paths: a large variety of possible choices and alternatives simultaneously enhances autonomy and decision-making.
17. The principle of "meaning in context": actions and their results are important in the context of the environment that makes sense to the student.

18. Text principle: reading and understanding the text in the existing context.
19. Intertextual principle: different genres of text are understood and recognized.
20. The principle of multimodality: learning is possible not only by displaying text and images, but also by immersing the student in unpredictable, mixed media.
21. The principle of "material understanding": learning outcomes are verified by interacting with other people and objects.
22. The principle of intuitive knowledge: in order to pass the game, you need a thorough knowledge of what is "in sight".
23. The principle of "splitting tasks into subtasks": training takes place in the "step-by-step" mode.
24. The principle of gradual increase in the complexity of tasks: the game's plot and "gameplay" gradually unfolds from simple tasks and scenarios to complex ones.
25. The principle of "concentrated example": basic skills are emphasized early by practice, which is repeated, so they work at higher levels as well.
26. Bottom-up approach: Basic skills are not acquired or used in isolation, but in the context of tasks and problems of a more complex level.
27. The principle of "clear information accurately and on time": training support is provided as the applicant's education progresses-each time accurately and on time.
28. Discovery principle: Simple communication of information is kept to a minimum, which forces the learner to make their own discoveries.
29. Transfer principle: learned skills are applied to solve practical problems.
30. The "culture model" principle: Students should think about possible cultural conflicts in the game.
31. The principle of "cultural learning models" provides those who are learning with the opportunity to experience new learning models.
32. "Cultural models of semiotic domains": there are opportunities for contact with different fields of activity.
33. The principle of distribution: learning is not just a "gathering of knowledge", it is distributed according to the areas of activity in which the person who learns operates.
34. The principle of distribution: active collaboration with friends and colleagues, with whom the person who is studying is familiar in person or virtually.
35. The principle of interest groups: Collaboration is based on the skills of the group members, not on age, race, or gender differentiation.
36. The principle of your own person (insider): a student is more than a student; they are a teacher and creator of consciousness.

4. Results and Analysis

Calculating the effectiveness of using business simulators in the educational process

In this part I have compared the cost of training using a business simulator with the cost of traditional lecture training as well as calculated the cost of training in the traditional way (lectures) and compare it with the cost of training using business stimulator and the cost of lectures on the example of a bachelor's degree in Enterprise Economics.

In accordance with the curriculum for the 2020–2021 academic year, approved by the Academic Council of the educational institution on 27.08.2020, the number of hours for the 1st and 2nd semesters is shown in Table. 2 and is 3,870 hours. Of these, there are 876 lecture hours. (SBS, *Business Simulator*)

Table 2. Number of hours of „Enterprise Economics" (1st, 2nd semester):

ECTS	Total hours	Classroom hours	Lectures, hour	Practical hours	Laboratory, hour
129	3 870	1 582	876	630	76

Source: [ONPU, Scan-copy of...]

The amount of tuition fees for full-time students of Akalavr in the specialty „Enterprise Economics" in 2021 is UAH 31,100. (ONPU, *Information on...*)

Cost of 1 classroom hour = Cost / Number of classroom hours = 31,100 UAH / 1,582 hours = 19.66 UAH

Cost of lecture hours = The cost of 1 hour of classroom * Number of lecture hours = 19.66 UAH * 876 hours = 17 222.20 UAH

According to Figure 2 we form table 3, which provides data on the degree of assimilation of the material.

According to Table 1, when using a business simulator, the degree of material assimilation is 15 times higher than traditional lecture training.

Cost of training using a business simulator = The cost of traditional lecture training / Number of times of mastering the material = 17 222.20 UAH / 15 times = = 1 148.14 UAH.

Of course, you can't completely replace lecture hours with a business simulation, but using business simulation in training will significantly reduce the cost of a student's education.

Table 3. The degree of assimilation of the material

Class type	Degree of assimilation of the material	How many times is the material assimilation higher
Lecture	5%	15,000
Reading	10%	7,500
View audio and video	20%	3,750
Demonstration	30%	2,500
Group discussion	50%	1,500
Simulation of a real activity	75%	1,000
Training others	80%	0,938

Source: (Kravchuk, Shevchuk, 2019).

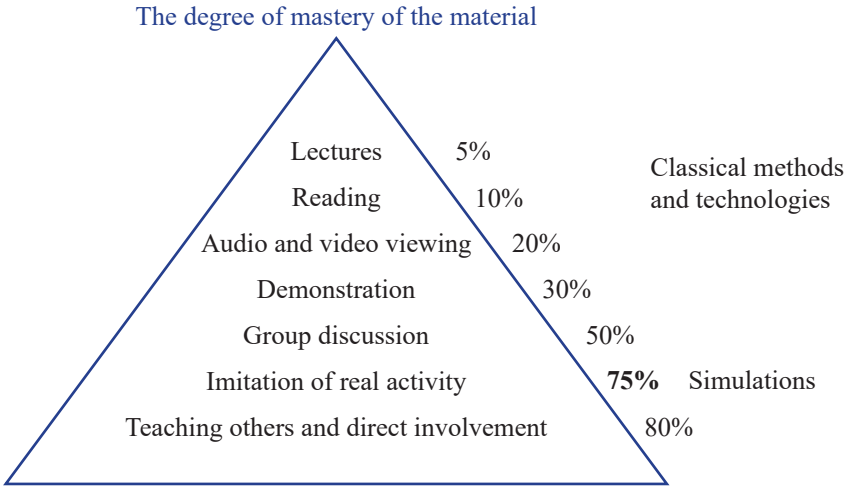

Fig. 2. The degree of mastering the material
Source: (Kravchuk, Shevchuk, 2019).

5. Conclusions

Recommendations for improving the educational process using business simulation technologies

Advantages of simulation training/scenarios: (KINT, *ViAL+ business simulation as the latest educational tool*):

— hands-on experience in a risk-free virtual environment for the enterprise;

— reducing the student's emotional stress during the first independent decision-making;
— unlimited number of repetitions to practice your skills;
— practice actions in rare or critical situations;
— no dependence on the company's operating mode;
— a virtual simulator takes over some of the teacher's functions;
— develop both individual skills and the ability to work together as a team;
— objective assessment of the achieved skill level.

The main requirements for simulation training are (KINT, *ViAL+ business simulation as the latest educational tool*):

1. Communication.
2. Identifying the problem.
3. Assessment of the main economic indicators.
4. Using different methods to fix the problem.
5. Checking the effectiveness of the methods used.

In conclusion, simulation learning is a powerful tool for modern higher and extracurricular education. This has found application in the educational processes out-of-school educational institution "Center for Scientific and Technical Creativity of Youth «Polet»". Development simulation forms of learning through modeling in the educational process of relationships and conditions of real work of a virtual enterprise increase the competitiveness of applicants for education in the labor market. Simulation scenarios significantly increase the motivation and interest of future specialists in mastering practical skills and their ability to implement these skills in further professional activities.

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Wykorzystanie symulatorów biznesowych w procesie edukacyjnym STEM-edukacji Ukrainy jako kierunek orientacji zawodowej młodych ludzi

Streszczenie:

Cel: Instytucje edukacyjne zwracają uwagę na usprawnienie procesu edukacyjnego poprzez stopniowe przenoszenie zajęć do aktywnego formatu dydaktycznego i aktywizowanie procesu przy użyciu innowacyjnych metod oraz nowoczesnych technologii edukacyjnych, w tym studiów przypadku, gier biznesowych, szkoleń, technik burzy mózgów itp. To przyczyniło się do utworzenia pozaszkolnej instytucji edukacyjnej „Centrum Twórczości Naukowo-Technicznej Młodzieży «Polet»" Rady Miasta Zaporoże regionu Zaporoża do twórczej komunikacji nie tylko podczas zajęć stacjonarnych w klasie, ale także w trakcie nauki zdalnej. Celem była praca w zespole, zwiększenie efektywność percepcji materiału teoretycznego z zakresu ekonomii oraz zdobycie praktycznych umiejętności w zakresie zarządzania przedsiębiorstwem.

Materiały i metody badawcze: Zastosowane metody obejmują przegląd literatury (teorię) oraz opis doświadczeń autorów w danej dziedzinie.

Wyniki: Wynikiem badań jest uporządkowanie procesu kształcenia na uczelniach wyższych i podczas zajęć pozaszkolnych oraz analiza efektywności szkoleń symulacyjnych w kształceniu zawodowym przyszłych ekonomistów.

Wnioski praktyczne: Wynikiem praktycznym jest przedstawienie procesu wprowadzania technologii symulacji biznesowej do procesu edukacyjnego instytucji edukacyjnych oraz analiza efektywności wykorzystania symulacji biznesowych w procesie edukacyjnym.

Zgodnie z celem badania autorzy wyznaczyli i rozważyli następujące zadania:

1. Uwarunkowania stosowania podejścia kompetencyjnego w procesie edukacyjnym;
2. Zdefiniowanie istoty pojęcia „symulator biznesu”;
3. Etapy rozwoju gier i symulacji biznesowych;
4. Analiza rynku gier i symulacji biznesowych;
5. Obliczanie efektywności wykorzystania symulatorów biznesowych w procesie edukacyjnym;
6. Rekomendacje usprawnienia procesu edukacyjnego z wykorzystaniem technologii symulacji biznesowej.

Wnioski i podsumowanie: Nauka symulacyjna jest potężnym narzędziem nowoczesnej edukacji wyższej i pozalekcyjnej. Znalazło to zastosowanie w procesach edukacyjnych pozaszkolnej placówki oświatowej „Centrum Naukowo-Technicznej Twórczości Młodzieży «Polet»”. Rozwój symulacyjnych form uczenia się poprzez modelowanie w procesie edukacyjnym relacji i warunków rzeczywistej pracy wirtualnego przedsiębiorstwa zwiększa szanse osób konkurujących na rynku pracy.

Słowa kluczowe: szkolnictwo wyższe; edukacja pozaszkolna, edukacja pozaszkolna; symulator biznesowy; praktyczne umiejętności.