



Safwan Ali Al Salaimeh

E-mail: ssalaimeh@aut.edu.jo

Orcid: <https://orcid.org/0000-0002-8474-3471>

Software Engineering Department, Aqaba University of Technology

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Electronic guidance as a new technology for teaching in educational institutions

ABSTRACT

E-learning has become at the present time a necessity, as it has become one of the education techniques that are used in educational institutions and is inevitable in all educational institutions because it contains an integrated educational content, as the content provided by traditional education has become no longer meets the need. The user has become unable to keep pace with scientific and technological development in all fields, including educational institutions, as it is known that the Arab world needs a quantum leap in technological development, especially e learning, compared to developed countries. E-learning has proven its worth during and after the Corona pandemic, as it has become the only alternative to traditional education, especially in educational institutions. This research sheds light on the concept of e-learning, with an explanation of some of the characteristics and modeling of these forms of education, in addition to some problems facing its progress.

Keywords: E-learning, research, traditional education, technological development, guidance, inevitable.

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La orientación electrónica como nueva tecnología para la enseñanza en las instituciones educativas

RESUMEN

El e-learning se ha constituido en la actualidad en una necesidad, ya que se ha convertido en una de las técnicas educativas que se utilizan en las instituciones educativas y es inevitable, porque contiene un contenido educativo integrado, ya que el contenido proporcionado por la educación tradicional, ya no satisface las necesidades. El usuario se ha vuelto incapaz de seguir el ritmo del desarrollo científico y tecnológico en todos los campos, incluidas las instituciones educativas, ya que se sabe que el mundo árabe necesita un salto cuántico en el desarrollo tecnológico, especialmente el e-learning, en comparación con los países desarrollados. El e-learning ha demostrado su valor durante y después de la pandemia de Corona virus, por haberse convertido en la única alternativa a la educación. Esta investigación arroja luz sobre el concepto de e-learning, con una explicación de

algumas de las características y modelos de estas formas de educación, además de algunos problemas que enfrenta su progreso.

Palabras clave: e-learning, investigación, educación tradicional, desarrollo tecnológico, orientación, inevitable.

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Orientação eletrônica como uma nova tecnologia para ensino em instituições educacionais

RESUMO

O e-learning se tornou atualmente uma necessidade, pois se tornou uma das técnicas educacionais utilizadas em instituições educacionais e é inevitável em todas as instituições educacionais porque contém um conteúdo educacional integrado, pois o conteúdo fornecido pela educação tradicional não atende mais à necessidade. O usuário se tornou incapaz de acompanhar o desenvolvimento científico e tecnológico em todos os campos, incluindo instituições educacionais, pois é sabido que o mundo árabe precisa de um salto quântico no desenvolvimento tecnológico, especialmente e-learning, em comparação com os países desenvolvidos. O e-learning provou seu valor durante e após a pandemia do Corona, pois se tornou a única alternativa à educação tradicional, especialmente em instituições educacionais. Esta pesquisa lança luz sobre o conceito de e-learning, com uma explicação de algumas das características e modelagem dessas formas de educação, além de alguns problemas que enfrentam seu progresso.

Palavras-chave: E-learning, pesquisa, educação tradicional, desenvolvimento tecnológico, orientação, inevitável.

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INTRODUCTION

Information technology has recently become the backbone of life, as it is used in all fields of life, whether civilian or military.

As for Jordan, His Majesty King Abdullah II bin Al Hussein gave the information technology sector great attention. The Ministry of Communications and Information Technology and the Ministry of Digital Economy were established to keep pace with the technological revolution, which helped put Jordan on the global map, giving Jordan a logistical and strategic center, whether at the level of the Middle East or The world as a whole.

Currently, staff training is one of the most important policy areas of modern organizations that think about their future prospects. The experience of most countries shows that it is knowledge, skills, and a high level of personnel competence that are the key to the stability and success of an organization in the market, they form the basic basis for the further development of an organization [12, 13]. In the modern world, various models of knowledge transfer have long been developed. Almost all of them, to one degree or another, have found their place in the organization's personnel training system. Today, both in Jordan and abroad, one of the traditional training models is most successfully used - mentoring and it is various forms, which complement the mentoring method and increase its effectiveness. Let us consider them in more detail [9, 11].

Goals focused on certain short-term results. The ward must make some efforts to prove himself in the period between meetings and achieve his goals. The problem is the lack of personal communication, so this model is not suitable for new employees who need closer interaction with a mentor, but can be successfully applied if the mentee already has work experience and his development can be transferred to the area of self-development. Speed Mentoring is a one-time meeting of employees with a higher-level mentor or personnel development specialist in order to build relationships with other people united by common

problems and interests. Such meetings help formulate and set goals for individual development and career growth based on information received from authoritative sources, exchange opinions and personal experiences, and build mentor-mentee ("peer-to-peer") relationships. Flash Mentoring is a new mentoring concept described in a review by an independent human resources agency of the US Government [19]. The bottom line is this. Employees wishing to act as a mentor should participate in a short, no more than an hour, meeting with potential mentees, during which mentors can share their life experience in building a career and make some recommendations. After this meeting, the participants decide whether they would like to continue the mentoring relationship or not. Mentors and mentees are selected with little or no criteria, and the latter may request resumes from several mentors to compare their qualities and abilities. Once a mentor is assigned to a mentee, they may, after the first face-to-face meeting, decide to end the relationship. If both sides see the prospect of cooperation, they begin to implement a mentoring program.

Based on the advanced Jordanian and foreign experience, the state Jordanian also decided to introduce a mentoring system. Since 2019, a Methodological Toolkit has been developed for the use of mentoring in the civil service, which defines such forms of mentoring as: a mentor from among senior civil servants of the relevant structural unit; - a mentor from among equal civil servants of the relevant structural unit; - a mentor from among senior civil servants of an adjacent structural unit; - a mentor from among the persons dismissed in connection with the achievement of the age limit for the civil service [8]

As the analysis shows, mentoring is one of the most common forms of staff training, which has proven itself both in business organizations and in the public service. However, the mentoring method and its more modern forms, despite the fact that they have a number of advantages, also have a number of serious.

Shortcomings. The most significant of them is the decrease in the working and economic efficiency of highly professional employees involved as a mentor, another equally important drawback is the unstructured presentation of information (knowledge, skills) and the lack of an algorithm and pedagogical teaching methods. In order to minimize losses, as well as to optimize the learning process, and achieve the same learning success as mentoring, many companies are introducing informal, non-formal education, leaning technologies [9].

These technologies are based on the widespread use of electronic games. For example, L'Oreal uses the "Hair-be 12" educational game to develop key skills for hair salon employees. At MITER Corporation, applicants pass the "Honorable Job" 3D game. At Renault, the game teaches service standards in a car service. The Hilton hotel chain uses a virtual guest service simulator. British Gas uses a training course on effective communication and troubleshooting for service engineers. The created package of electronic courses allows the newly hired civil servant to undergo accelerated adaptation in the government and significantly improve the level of their professional knowledge and skills.

It helps the mentor and the personnel service to exercise objective control over the development of the necessary information by civil servants, and the regional civil service management body to exercise internal control over all mentoring processes. The direct participants in e mentoring are both a civil servant, his mentor, personnel department, and an educational organization ("corporate university") that provides e learning, and also forms and updates training programs.

THE PURPOSE OF THE STUDY :

Introduction to e-learning, with a presentation of some of the characteristics and modeling of some forms of education, in addition to presenting some of the problems that stand as a barrier to the progress of this type of education.

Literature review:

- 1- Koroghlanian Study (2000)-

Animation Audio and Spatial Ability Optimizing Multi Media for Scientific Explanations"

The acoustic and spatial ability of animation: the adaptation of multimedia in scientific explanations:

Study Objectives: The study aimed to reveal the effect of some multimedia elements such as sound, animation, and the third dimension on computer-assisted biology learning programs. Study method: experimental method. And in four groups: The study sample: The study sample was a group of secondary school students.

Study results: The results of the study indicated that the students who studied the material in the form of animated pictures had higher achievement than their peers who studied the material in a static form, and the study also revealed an improvement in the attitudes of the students who studied with the aid of the computer. And it revealed an improvement in the understanding of students who studied in the group explaining the material with animated pictures, and the ease of handling information more than the fixed group [5].

2- Wang, et a (2002)

"An Elementary School Mathematics Dynamic Learning System and its Effects :

The aim of the study: To know the effect of using computerized multimedia software on students' achievement in mathematics. From the fourth grade of primary school

Study sample: The study was conducted on a sample of (72) students in Chong Cheng Elementary, and they were divided into two groups, experimental and control, each of which included 36 students.

Research tools: pre-post achievement test, and computerized multimedia software in mathematics.

Study results: The students of the experimental group who studied using the educational software outperformed the students of the control group who studied by the methods used, and the results also showed an increase in the achievement of students with low achievement in the same experimental group [4].

3) Liu (2006):

"The Effect of a Hypermedia Learning Environment on Middle School Students" 'Motivation ' Attitude 'and Science Knowledge.

Study Objectives: The study aimed to investigate the impact of the multimedia learning environment in improving scientific knowledge and attitudes towards learning science.

Study method: the experimental method. Of the students of the sixth grade in the city of primary school

Study sample: The study sample consisted of (437) students (Southwestern).

Study tools: multimedia program, achievement test.

Study results: The results of the study indicated:

1) The scientific knowledge of the research sample increased significantly in the post-test compared to the pre-test.

They also retained most of what they had learned after two weeks.

2) Their attitudes towards science increased significantly after using this software and their motivation towards learning it increased.[1]

4) Harskamp, et a (2007):

"Does the Modality Principle for Multimedia Learning Apply to Science Classroom?"

Study Objectives: The study aimed to identify the effectiveness of multimedia in secondary school students' learning of science in a series of illustrations and drawings.

Study method: the experimental method.

It was distributed into a control group, the number of which was (28).

Study sample: The study sample consisted of (55) students and an experimental group of (27) students who learned by sound, by text and images printed on paper, or by multimedia images on a computer.

Study tools: multimedia program, achievement test.

Study results: The study found that students learn better with graphics and spoken text on multimedia that include words than graphics and printed text, and the effectiveness of spoken completeness is greater than the effectiveness of learning with printed words in the traditional way, as well as contributes to less Save time when interacting with science lessons [2].

5) Al-Ghazzi (2012)

The effect of a computer program in teaching the concepts of science and health education on the academic achievement of first-grade students in basic education.

The aim of the study: to reveal the impact of a computer program in science and health education on the academic achievement of students.

The first grade of basic education.

Study sample: The sample was selected from the first grade students of the first cycle of basic education, divided into:

Two groups: the experimental group, numbering (30), and the control group, numbering (30).

Study tools:

A - The computer program prepared by the researcher.

B- Achievement test (pre and post).

Results:

1) The method of using the computer-designed science curriculum is superior to the usual methods in schools in the direct post-test, and this superiority is due to the effectiveness of computer-based learning (sound, still and moving images, and movies....).

2) An increase in the achievement level of the students of the experimental group (A and A) compared to the achievement of female male students of the control group.

3) The high level of knowledge retention in the post-posttest for the benefit of the experimental group, and this is due to the effectiveness of using the computer in creating an environment that motivates the students' interests towards effective learning, gaining them a spirit of excitement and suspense, as a result of which they retain the knowledge that is entrenched in their minds for a period of one year. The length of the usual methods of education.

4) There is no effect of the gender variable on the method of learning and teaching using the computer in the experimental group, because both sexes learned in the same conditions and received the same method of education [3].

Electronic guidance concept:

Mastering the programs of basic electronic courses is fixed in an individual mentoring program. Each module of electronic courses contains a set of cases, simulators and final variable tests. Electronic courses take into account all the requirements of pedagogical design, are maximally practice-oriented, which makes their application effective. Educational materials (courses) prepared by an educational organization are placed in the departmental information system that provides the technical implementation of "electronic mentoring" (hereinafter referred to as the departmental system).

With a sufficient level of automation, the process of "e-mentoring" can be represented in the form of the following algorithm: 1) the personnel service assigns an individual adaptation program to a newly hired civil servant, formed from the courses and modules available in the departmental system; 2) a first-time civil servant masters materials in a remote format through a departmental system; 3) the personnel service and the mentor advise the newly hired civil servant as they master the educational materials; 4) for the first time a civil servant is being tested on the completed courses with the help of a departmental system; 5) the personnel service and the mentor carry out objective control over the development of educational materials.

If necessary, educational materials are updated. Thus, the introduction of "electronic mentoring" allows: - to ensure the completeness and relevance of educational materials due to their typification and regular updating; - to form individual adaptation programs for civil servants; - to exercise objective control over the completeness of the development of the required knowledge and skills by civil servants, as well as to reduce the labor costs of the personnel service and mentor; - to obtain the required knowledge and skills at a convenient time for a civil servant and in a convenient form, as well as to return, as necessary, to the previously covered material; - reduce the cost of educational activities. In this regard, the authors of the article developed the concept of an intra-organizational educational environment for professional development and personnel assessment based on the use of game modeling (See Fig. 1).

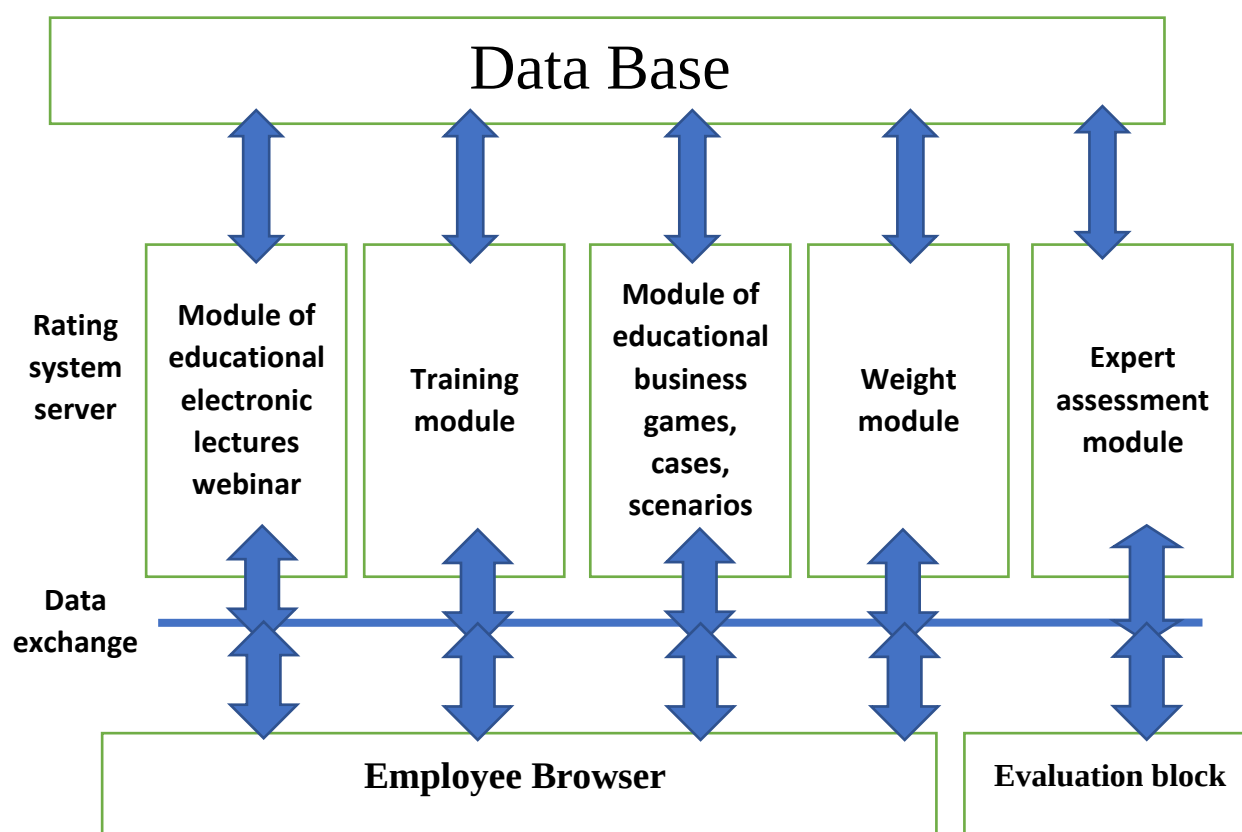


Figure 1. Model of the intraorganizational educational environment for professional development and personnel assessment based on the use of game modeling.

By imitating real communication dependencies that arise in the organizational environment and obtaining output data on each scenario, learning in the course of free creative analysis, searching for options for solving a problem by comparing different scenarios and acting according to a strictly defined algorithm, they create new generalized knowledge or master

important professional competencies [6]. Despite the indisputable advantage of simulation game methods and the "E-mentoring" project in comparison with other forms of staff training, the heads of Jordanian companies and government authorities have not yet paid enough attention to the use of e-learning methods and technologies [8, 9].

Simulation models for the educational process:

The problems are primarily related to the complexity of describing situations and the weakness of their modeling tools, in addition, the complexity of modeling such games comes from the fact that:

- Simulation classes use models built on the use of production rules and the use of sematic modeling schemes. Simulation models allow you to simulate the activities of employees in real time.
- When modeling, the objective reality is replaced by a virtual one: the main characters of these employees replace real employees; real process information is replaced by pseudo real information obtained by process simulation; when passing the task, the time scale for decision-making is compressed.
- The main characters (Jordanian employee and citizen) must be able to act and have knowledge of all the processes used in the business game; they must have an idea of the possible actions in the processes related to his activities.
- Mandatory involvement of auxiliary characters as experts (head of a structural unit; immediate supervisor of an employee) to prepare documents for the preparatory stage, to evaluate the results of the business game. The immediate supervisor of a civil servant must evaluate the results of the business game of his immediate subordinates.

Based on these complexities, the development of simulation games takes place on an initiative basis and within the framework of educational or research institutions. Analyzing the market of educational simulation games, we concluded that none of the games presented on the Jordanian market is aimed at improving the administrative literacy of staff. Here, of course, there are objective reasons; they are related to the lack of a unified regulation of administrative activities in business sector organizations. Therefore, our choice fell on the public service. Interdepartmental coordination of documents; budget planning management; budget management, etc. [10].

METHODOLOGY

Currently, more than 2000 business games are used in the world. It is worth noting that M. M. Birshtein [11, 12] developed the first business game; then, since 1938, business games were banned. In 1968, the development of the large-scale Reform game, the business game Astra, was resumed after the advent of the large-scale game (Rand Corporation, 1955; American Management Association, 1958).

This method was actively developed. Of the contemporary foreign scientists: S. Malcolm [13], A. Taf [14], D. Kofer [15] and J. Cross [12].

A new round in the development of domestic role-playing simulation games occurred in the 80s of the twentieth century, with the introduction of personal computers into the educational process. At present, according to experts in the Jordanian system of education, gaming technologies are concentrated so far only in the field of improving economic literacy. Here it is worth mentioning such games as: "Cash Flow", "Rat Race", "Monopoly", "Financial Carousel". The main advantage of gaming techniques is that the proposed scenarios are not the product of any abstract generalization, but an objective reality. By imitating real communication dependencies that arise in the organizational environment and obtaining output data on each scenario, teaching in the course of free creative analysis, searching for solutions to the problem by comparing different scenarios and acting according to a strictly defined algorithm, they create new generalized knowledge or master

important professional competencies. Principles and methods are used to achieve the set goals.

Conducting business games that simulate various processes related to the activities of state bodies and employees. When developing simulation models, the authors used the method of constructing visual graphic models. The method of modeling in the visual simulation of space-time relations in relation to the study of the human factor in organizations was widely used in the publications of Kraso [10, 13].

THE RESULTS AND DISCUSSION

The authors of the article have developed a computer game "Personnel management", which introduces employees to compliance with administrative regulations, using the example of the personnel process "Vacation registration". The purpose of the development of this game is to reduce the number of incorrect or erroneous actions by civil servants in the performance of their duties.

The preparatory stage is the preparation of the game.

Because of the preparatory stage, a regulatory reference base of processes for conducting business games is formed. In the event of a change in regulatory legal acts, the regulatory reference base is also promptly changed. Based on the formed normative reference base, it is formalized using a simulation model built on production rules and sematic schemes.

In the process of formalizing the regulatory reference base in accordance with the principles of constructing production rules, it is necessary to form or correct a set of conditions $F = \{f_1, f_2, f_3, \dots, f_m\}$ and many activities $E = \{e_1, e_2, e_3, \dots, e_m\}$ for the processes involved in the business game.

(See Table 1 and Table 2).

Table 1. Elements of the set of conditions

No.	Conditions	Number of conditions
1	Vacation request received	U ₁
2	Signed by all leaders	U ₂
3	No executive signatures	U ₃
4	Doesn't match holiday schedule	U ₄
5	Coincides with the vacation schedule	U ₅
6	The specified number of vacation days exceeds the prescribed number	U ₆
7	The specified number of vacation days does not exceed the prescribed number	U ₇
8	Leave order issued	U ₈
9	Leave order signed	U ₉

Table 2. Elements of the action set.

No.	Actions	Number of actions
1	Issuing a leave order	d1

2	Return of application for leave	d2
3	Notice of violation of the limit on the number of vacation days	d3
4	Vacation Schedule Violation Notice	d4
5	Signing a leave order	d5
6	Checking for the presence of signatures of managers	d6
7	Checking for compliance with the vacation schedule	d7
8	Checking for the allowable number of vacation days	d8
9	order signing notice	d9

Upon completion of the process of forming a set of conditions and actions, it is necessary to check the consistency and consistency of the sets F and E separately. For this purpose, it is necessary to use the developed specialized algorithms or apply existing methods of information processing.

Based on the prepared sets F and E, production rules $P = \{p1, p2, \dots, pm\}$ are formed (See Table 3).

Table 3. Production rules

No.	Conditions	Actions correct	actions incorrect	Rule code
1	u1 & u2	d1	d2	p1
2	u1 & u3	d2	d1	p2
3	u4	d4	d5	p3
4	u6	d3	d2	p4
5	u5	d5	d4	p5
6	u1	d6		p6
7	u2	d7;d2		p7
8	u5	d8;d4		p8
9	u6	d1;d3		p9
10	u8	d5		p1
11	u9	d9		p2

Based on the sequence of production rules, business game scenarios are formed in the form of a set $S = \{s1, s2, s3, \dots, sm\}$. The scenario consists of a certain sequence of production rules $si = \{p1, p4, p20, p8\}$ (See Table 4).

Table 4. Elements of a set of business game scenarios

No	The name Scenario	Code of Scenario	sequence of rules of
1	Successful vacation planning	s1	{p1, p5}
2	Extremely unsuccessful vacation design scenario	s2	{p2, p3, p4}
3	Successful Detailed Vacation Scenario	s3	{p6 – p11}

In the process of constructing production rules, the principle of plausibility of the simulated situation must be observed. The description of the game activity should be as close as possible to real situations. The principle of likelihood is implemented in the simulation game through:

- Reaction of the external environment;
 - A set of game forms of planning and accounting documents (they must be exactly the same as in life);
 - Procedures for making managerial decisions, bringing them to the executors;
- Interaction of game participants;
 - Organization of business meetings, conferences by analogy with a real practical situation. After creating scenarios for conducting a business game on processes and procedures, methodological materials are formed. Methodical materials consist of the following materials:
- Training materials for familiarization with the subject area (process and procedure);
 - A program for conducting scenarios (a list of scenarios, the amount of time to pass the scenarios, possible solutions);
- materials that allow the assessment of the results of the passage of scenarios).

The main stage is the active part of the game.

In accordance with the training materials developed at the preparatory stage, participants are being prepared for the business game. When acquiring theoretical skills, various forms of training are used:

- Lectures;
- Seminars;
- Practical lessons.

During the training process, participants should be prepared to participate in a business game based on the following principles.

1. The principle of gradual entry of participants into the training material. The principle of gradualism means the following provisions:

- The first stages of the business game should be as simple as possible;
- Adaptation and mastering the principles of conducting a business game;
 - The study of problems is based on the experience of trainees in a business game.

The use of provisions will mobilize students for productive work with all educational materials.

2. The principle of uniform game information. The principle involves the organization of simulation games, in which the trainee receives equal portions of new information every game day. Before the start of the business game, the participant is given a list of processes and procedures in the form of formalized scenarios that he must solve. During the business game, the conditions of the production rule f_j of the scenario s_i are displayed to the participant. The participant must choose the correct actions e_z according to the proposed condition. The participant on their own makes the correct actions or they are asked to choose from a list of possible actions. During the course of the scenario, the following restrictions may be proposed:

- change the time limit for the passage of the scenario;
- Introduction of additional scenarios during the passage of a business game;
- Prompt introduction of changes to the conditions for passing scenarios
 - changing the parameters of the passage of the game. Analysis and evaluation of the results are carried out according to the following criteria:
 - Comparison of problems and phenomena that took place in the business game;
 - determining the correspondence of the business game to real life;
- Assessment of the decisions made during the course of a business game, their effectiveness, moral or value meaning;
- identifying the causes of positive and negative behavior of participants in a business game;
- Proposals for changing the scenarios in the business game, in the actions of the participants in order to achieve the best result;
- Proposals for improving the quality of professional activity. A correctly constructed sequence of actions during a business game is built into a chain of results consisting of positive productive rules, which leads to the learner learning the algorithm of actions.

STUDY RECOMMENDATIONS

Based on the results of our current study, we can make some recommendations regarding the use of technology in teaching and learning in order to make the most of these technologies, including:

- 1- The need for educational systems to pay attention to educational technology and technological standards and to develop high-quality projects to bring about the transformation required to achieve quality.
- 2- Preparing teachers in preparatory colleges and enabling them to adopt modern teaching practices and educational trends based on technological standards.
- 3 - Training teachers well to carry out their serious roles in light of the age of information and technological developments
- 4- The need to benefit from educational technology standards.
- 5 - Employing technological programs to integrate technology into curricula in general education.
- 6- Paying attention to studies and following up on everything new in the world of educational technology.
- 7 - Work to reduce the obstacles faced by teachers in the use of modern technology.
- 8- Activate the electronic archiving of the files of students and teachers in schools so that it is possible to refer to them easily and easily when needed.

SCIENTIFIC ADDITION

From the foregoing, we see that the scientific addition lies in:

- In analyzing a number of topical problems and trends in e-learning, which are considered a qualitative addition to educational technologies in educational institutions, and expanding the applied capabilities and effectiveness of using information technologies in the field of e-learning through foreign studies, which had a major role in the development of educational technology based on the use of e-learning and the implementation of related projects;

Also, this study presented several additions in the form of methodologies and algorithms.

CONCLUSION

We have given an example of imitation of one of the components of the personnel process "Vacation registration" of the developed computer game "HR Management". Of course, there is still a lot of work to be done to fully launch the game. For example, it is necessary to clarify the new plots of the game. At the moment, the teaching staff of the Department of Information Technologies in Public Administration is actively developing a package of various scenarios, including such modules as: "Introduction to the position", "Organization of office work in government bodies", "Procedure for considering citizens' appeals", In addition, it is necessary to determine the relationships that will be copied from life; establish rules, set roles, etc. However, despite the existing difficulties, simulation games are a very promising direction. "The development of information technologies (IT) is a socially significant phenomenon in managing the processes of creating a new world economy, and therefore their application should be not only effective, but also comfortable in operation" [7]. In fact, we are talking about creating simulators on which employees can train, acquire the necessary skills in solving problem situations, make mistakes, and thereby learn how to pass them in real life, develop their abilities and acquire new skills.

In the end, I see that e learning has a great and important role in development, education and training, in addition to the development of educational programs and a significant contribution to the impact and increase of knowledge among learners, whether they are teachers or students.

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