

A MODEL FOR IMPLEMENTING INNOVATIONS IN TRAINING

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ABSTRACT

JEL: O150

Received: 2-8-2022

Accepted: 10-8-2022

Published: 1-9-2022

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The purpose of this article is to develop a model for the implementation of innovations in education. The goal will be achieved through the implementation of the following research tasks: to define the essence of innovations in education; to analyze the types of innovations applied in the learning process; to develop a model for implementing innovations in education; to present the results of testing the model and to derive the benefits of applying the model. The object of the research is innovations in the learning process. The subject of the research is innovations in the learning process in higher education; Microsoft platforms (Teams, Forms), and their use in the learning process. The developed model includes online learning, Flipped classroom, Video streaming, EdTech, Project-Based Learning (PBL), Feedback assessment tools (assessment students, course assessment), Video conferencing and virtual classrooms, Video projects, Real-time polling, Interactive whiteboards and file annotations, Breakout room, Interactive book.

Some of the main results show that students are satisfied with the implementation of innovations in the learning process; students appreciate the flexibility that online learning affords them. Some of the benefits associated with the implementation of the model are: it helps to achieve sustainable development of the organization; helps to implement interactive control, a new pedagogy is developed through the model.

Limitations: This article analyzes the innovations applied in the learning process in higher education. Only innovations that will be implemented in the model are analyzed. The developed model for implementing innovations in education has been tested in a higher education institution.

Keywords: *innovations; online education; higher education; interactive textbook; system interactive control*

Citation: Peicheva, M. (2022) *A Model for Implementing Innovations in Training*. Journal “Човешки ресурси & Технологии = HR & Technologies”, Creative Space Association, 1, pp. 5 – 17.

INTRODUCTION

The topic of innovations in education is gaining more and more popularity and relevance. There are at least three reasons for this.

The first is related to the implementation of the “Competency-based learning” approach in modern education. The main characteristic of this approach is that a central place in the training process is the demonstration, by the trainees, of the skills to apply what they have learned in practice. “Competency-based learning” focuses on observable skills.

The innovations that are applied in the learning process contribute to the acquisition of computer skills, analytical thinking, develop imagination and other sought-after skills.

The second is related to the skills most in demand by employers. In this regard, recruiters believe that if the soft skills that are sought by different organizations are changing gradually, then the hard skills are developing rapidly, pushed by modern technologies (Anderson, 2020). The top 10 hard skills in demand in 2020 (from 1 most in demand to 10) are: “blockchain, cloud computing, analytical reasoning, artificial intelligence, UX design, business analysis, affiliate marketing, sales, scientific computing, scientific computing” (Anderson, 2020).

Of the soft skills, the most sought after are: creativity, persuasion, collaboration, adaptability, emotional intelligence. Modern technologies enable the implementation of innovations in education, which in turn will allow students to develop the sought-after hard and soft skills.

In third place is the digitization of business. Brian Kropp, group vice president of Gartner's HR practice says that “More than two-thirds of business leaders believe that if their company does not become significantly digitalized by 2020, it will no longer be competitive” (Gartner, 2018). According to the company Gartner “Most organizations are undergoing a digital transformation that directly impacts how they do business, yet 70 percent of employees have not mastered the skills they need for their jobs today, and 80 percent of employees do not have the skills needed for their current and future roles” (Gartner, 2018).

The application of innovation in the learning process will provide students with the knowledge and develop skills suitable for digitized organizations. It will give them more confidence in their career search in today's digital world.

In summary, we can draw the conclusion that as Valeria Dineva claims „Innovation in training is a necessity stemming from the needs of today's young people as well as the needs of universities.“ (Dineva, 2019, p. 5)

Another reason that is essential to implement innovations in the learning process is that they support people with disabilities. As Radka Nacheva claims “Thanks to the rapid development of modern technologies, this type of users has equal access to the surrounding environment. They can freely handle computer resources and have opportunities for training, finding, and starting work. The tools that give them these possibilities are called assistive technologies.” (Nacheva, 2021, p.78).

METHODOLOGY

The purpose of this paper is to develop a model for implementing innovations in education.

The goal will be achieved through the implementation of the following research tasks: to define the essence of innovations in education; to analyze the types of innovations applied in the learning process; to develop a model for implementing innovations in education; to present the results of testing the model and to derive the benefits of applying the model.

The object of the research is innovations in education. The subject of the study are innovations in higher education; Microsoft platforms and their use in the learning process.

The model was tested with 32 (thirty-two) students, master's degree studies in the discipline “Human Resources Audit”. In relation to students' understanding of learning innovations and their application in learning, 62 students in bachelor degree and 33 master's students were surveyed. The survey and the approbation of the model were realized in connection with the implementation of a project financed with funds from the fund “Research of the UNSS”, contract No. Research NI-13-2019.

Limitations: This article analyzes the innovations applied in the learning process in higher education. Only innovations that will be implemented in the model are analyzed. The developed model for implementing innovations in education has been tested in a higher education institution.

THE ESSENCE OF INNOVATIONS APPLIED IN THE LEARNING PROCESS

As Sam Thompson claims, “Innovation in education isn't a specific term with fixed definitions.” and according to him, “To innovate means to make changes or do something a new way. To innovate does not require you to invent. Baked into innovation are creativity and adaptability.” (Thompson, 2022).

I believe that “Innovation in education is an idea and/or invention that aims to satisfy the needs and expectations of the students and, together with that, to build in them competences with which they can adapt successfully in the dynamically changing environment. Moreover, innovations in education are the result of activities carried out through interaction between all stakeholders in the process, creating a motivating environment for innovation, protected from risks associated with the use of modern technologies.” (Peicheva, Stefanov, Atanasova, Kaneva, Dineva, Karavasileva, Andonov, Krastev, 2022, p.28).

TYPES OF INNOVATIONS APPLIED IN THE LEARNING PROCESS

Online learning is a system for acquiring knowledge and skills and forming attitudes through electronic devices and the use of the Internet. It is considered an innovation in learning because the learners have the opportunity not to be physically present in the classrooms.

And more, the use of fully online learning or combined with traditional learning in the classroom (Blended Learning) requires students to a “become comfortable with online tools and using the internet to contribute to their learning. A blended learning approach gives students the ability to discover how best to use tools that they will rely heavily on in their professional lives.” (Thompson, 2022).

The “**flipped classroom**”. It is considered an innovation in education because it differs from the traditional approach to education, in which the educational material is taught by the teacher and then the students, independently at home, have to complete a number of tasks and projects. Characteristic for the "flipped classroom" is that learners independently familiarize themselves with the learning material, and on site in the educational institution perform tasks that are related to it. The “flipped classroom” can be used for face-to-face, online and hybrid learning.

Video streaming. It allows the lectures to be transmitted live (live streaming) and the students who do not have the opportunity to be present in the classroom not to miss the lecture. A classification of video streaming is offered by Supriya Bhosale, Vinayak Pottigar, Vijaysinh

Chavan (Bhosale, Pottiga, Chavan, 2015, p. 1089). Their classification includes five types of video streaming that can be used in the learning process.

“**Streaming an Educational Event**”, where lectures are streamed live from the auditorium and can be viewed in real-time by students not present in the auditorium. Also, the lectures can be recorded, and stored in an online archive, with access provided for the students. “**Streaming an External Life Event**”, where the video provides access to events that occur outside the audience. “**Streaming Explanatory Documentaries, Tutorials, Experiments**”, these are training videos that show how to perform a process and/or procedures in practice.

“**Consulting an Online Library of Educational Resources**” is about providing educational institutions with various archived videos, and documentaries for re-use. “**Constructing and Using Ones Own Resources**”, where teachers and students can themselves be creators of their own learning materials.

EdTech – “Educational technology (edtech) typically refers to any software, application or service developed to enhance education.... Innovative classroom technologies often mirror the innovations outside of education. So, the more students engage with technologies in the classroom, the better prepared they will be to engage with and through technology in the workplace.” (Thompson, 2022).

One of the examples in this regard is the Microsoft Teams platform, which allows video conferencing, online discussions, conducting systematic interactive control with feedback, monitoring student progress.

Project-Based Learning (PBL). With it, students identify problems and look for possible solutions. This helps students solve problems, develop creative thinking, and collaborate with others (creative thinking, problem-solving, and collaboration with other students.) (Thompson, 2022).

Feedback assessment tools are defined by Thompson (Thompson, 2022) as an innovation in learning. I fully support this opinion. The Microsoft Teams platform provides a wealth of possibilities in this regard.

Video conferencing and virtual classrooms. Virtual classrooms are video conferencing platforms built with specific tools for learning. Conduct virtual classes or provide options for students to collaborate virtually. Students and teachers alike need to become more comfortable on video. (Thompson, 2022). An example in this regard are the platforms Teams, Zoom.

Video projects are also defined by Thompson (Thompson, 2022) as an innovation in learning. According to him, students know very well how to navigate TikTok, YouTube, Instagram, or Snap and find the desired video. I believe that in addition to users of videos, students could also be creators of videos. I, therefore, support Thompson in his understanding that students should be assigned projects in which they develop videos (individually and/or in groups).

Thompson defines as learning innovations and Real-time polling, Quizzing is similar to Real-time polling, Interactive whiteboards and file annotations, Breakout rooms.

Real-time polling is another learning innovation that aims to test students' attention, for example. The teacher presents, but for example, on slides 5, 9, and 15 there are questions that the students have to answer. The questions are related to the material taught. This provides an opportunity for the teacher to understand what is the attention of the students to the taught learning material and how it has been absorbed.

Quizzing is similar to Real-time polling but involves more questions to students.

Interactive whiteboards and file annotations provides opportunities for students to share ideas, add to already shared ideas, answer questions, and write and discuss ideas with other colleagues. The Teams platform offers great opportunities in this regard.

Breakout room is “a small meeting room or a separate part of an internet meeting where a small group can discuss a particular issue before returning to the main meeting“ (Cambridge Dictionary) It can be applied by the teacher in role plays and group projects.

The interactive textbook is a type of e-book that has “motion”. Unlike a pdf textbook, which is static, in the interactive textbook has “motion”, pointing to definitions of key concepts in the subject, as well as references to scientific publications, videos, discussions as well as multimedia resolution case studies related to the topic. The interactive textbook contains not only links with references to articles, videos, but it can itself contain videos and other interactive elements. Interactive textbooks allow students to electronically solve specific tasks in them. It facilitates the teacher's check, saving paper for printing (Peicheva, [Stefanov](#), Atanasova, Kaneva, Dineva, Karavasileva, Andonov, Krastev, 2022, p. 34).

According to Venko Andonov “An interactive e-textbook is an electronic book designed to serve as a learning material enriched with interactive content, i.e. elements through which learners can perform active actions in order to enrich the learning process and better understand

and remember the material.” (Peicheva, [Stefanov](#), Atanasova, Kaneva, Dineva, Karavasileva, Andonov, Krastev, 2022, p. 51).

According to another definition presented by Valeria Dineva “Interactive Electronic Textbooks (IETs) are an innovative learning tool that can be used alone or in an integrated way with other innovative tools and approaches as part of the digitisation of the learning process. They make a real-time tracking of relationships between individual concepts, key concepts, standards, etc. IETs are characterized by visual and sound effects that facilitate the learning of the material.” (Dineva, 2021, p. 31, 32)

According to Zheneta Karavasileva “Electronic textbooks – are characterized by a logical scientific sequence of teaching material. Convenience to use anytime and anywhere, especially if it is on magnetic media” (Karavasileva, 2020, p. 42)

Another approach used to study innovations in education is that of Valeria Dineva, who points out that “innovative approaches can be considered depending on the different stages that make up the training process namely: Innovative approaches at the stages in the training planning; innovative approaches at the stage of in-class work; innovative approaches in conducting discussion; innovative approaches in the extracurricular activities; case studies as innovative approach; innovative approaches in providing feedback, tests” (Dineva, 2019, p. 6, 7, 8).

A MODEL FOR IMPLEMENTING INNOVATIONS IN LEARNING

The model for implementing innovations in education aims to facilitate the adoption of new knowledge and develop skills in students that are adequate to the needs of modern business.

The model uses online training that takes place through the Teams platform. The specially developed interactives textbooks will help to implement the “Flipped classroom”. Lectures can be recorded by the teacher, without the presence of students, and/or with the presence of students (Video streaming).

During the lectures, to control the students' attention, the teacher asks questions related to the topic he is teaching and/or presents slides on which there are questions related to the taught topic (Real-time polling). The lecture recording can be done regardless of whether the learning is face-to-face, hybrid or online. Students receive group and/or individual assignments on platforms such as MOODLE, and Teams (EdTech). During the learning process, students receive interactive case studies and work individually and/or in groups to solve them (Project-Based Learning (PBL)).

During training, students have the opportunity to solve tests in Microsoft Teams, which supports their independent preparation. For their part, students also have the opportunity to evaluate the course (Feedback assessment tools).

In the learning process, the teacher assigns tasks to the students to analyze videos from social networks and/or published in the interactive textbook. Along with this, students themselves develop video projects (Video projects). In connection with the implementation of the assigned tasks, students could share ideas online, for example in Teams (Interactive whiteboards and file annotations).

They carry out various projects, including those related to the development of presentations and videos. A systematic interactive control is carried out using Microsoft Forms and Teams. Students present the implementation of their projects (individual and/or group) using technical means. During training, students can use the “class notebook” in Teams to share ideas and work together with the teacher. Interactive textbooks are published on MOODLE and contain various interactive elements (lecture videos, keywords, links to articles, self-study tests, etc.) that present the learning material interestingly and entertainingly. Depending on the results achieved, corrective actions are implemented.

Using innovations in learning allows students to develop: computer skills, skills for working in virtual teams, communication skills suitable for remote work, skills for gathering and analyzing information in the Internet space, as well as other skills sought by modern employers.

Using innovations in learning provides an opportunity to acquire knowledge and skills in a different way and from different sources.

The model for implementing innovations in training (See Figure 1) was tested in connection with the implementation of a project financed with funds from the UNWE Research Activity, contract No. Research Activity Research NI-13-2019. “Research, development and implementation of innovative methods in the learning process”.

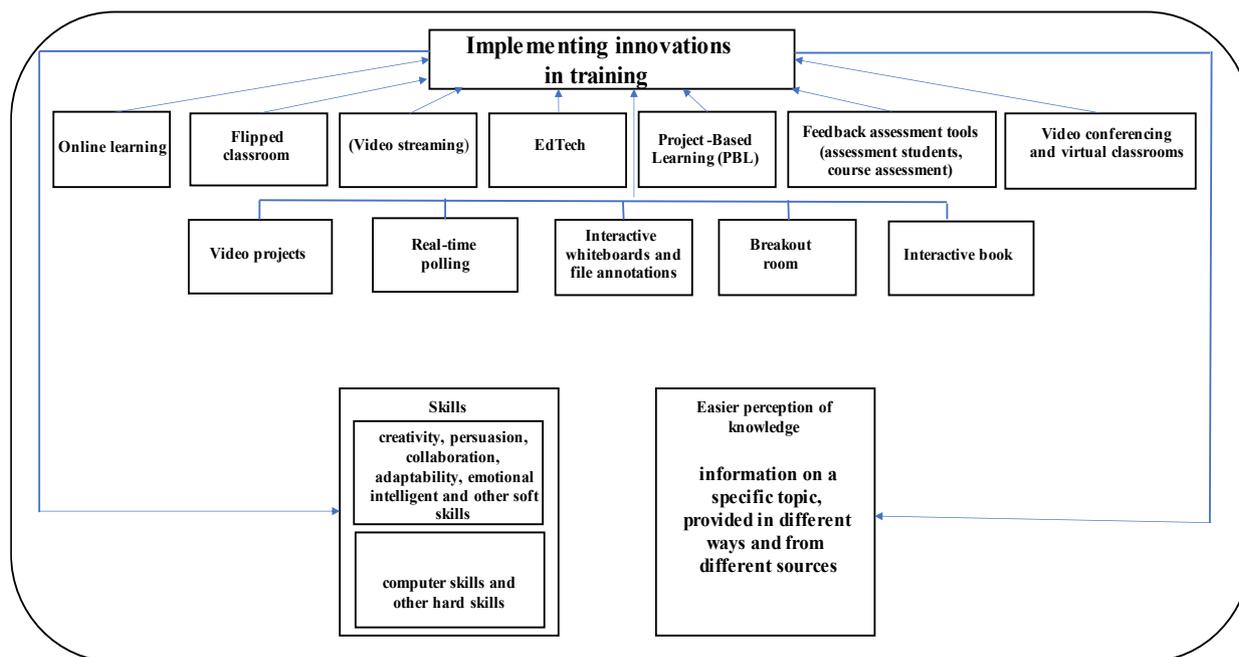


Figure 1. A model for implementing innovations in training

OUTCOMES AND BENEFITS IDENTIFIED IN THE PILOTING OF THE LEARNING INNOVATION IMPLEMENTATION MODEL

Some of the main results obtained when testing the innovation application model in the learning process are:

✓ **Student satisfaction.** 56% of the surveyed students, in the study groups in which the model was applied, prefer to learn from the interactive textbook because the interactive textbook has a variety of sources in it that they can use immediately (links, videos, presentations) while reading; 22% of respondents indicate that they like the interactive textbook more than the book one, because they remember the information in it more easily (Peicheva, Stefanov, Atanasova, Kaneva, Dineva, Karavasileva, Andonov, Krastev, 2022, p. 403, 404);

✓ **Appeal of lecture videos and self-study tests.** 41% of the respondents were impressed by the videos with the lectures on each topic, 31% were impressed by the self-preparation tests (Peicheva, Stefanov, Atanasova, Kaneva, Dineva, Karavasileva, Andonov, Krastev, 2022, p. 402);

✓ **Flexibility of online learning.** Bachelors and masters most appreciate the flexibility (62% of surveyed bachelors and 67% of surveyed masters) that online education provides (Peicheva, Stefanov, Atanasova, Kaneva, Dineva, Karavasileva, Andonov, Krastev, 2022, p. 306);

✓ **Using social networks for learning.** 37% of surveyed bachelors would like to use YouTube during training. 42% of surveyed masters would like to use YouTube, LinkedIn, Twitter, and Facebook in training (Peicheva, Stefanov, Atanasova, Kaneva, Dineva, Karavasileva, Andonov, Krastev, 2022, p. 305).

The benefits of the innovation application model in the learning process:

✓ The model contributes to the sustainable development of the organizations in which it is applied. Leading in this regard are interactive textbooks, for the publication of which it is not necessary to destroy trees;

✓ Achieving a synergistic effect. Through this model, students receive information from different sources, presented with different interactive elements (videos, gifs, links to articles, videos from social networks), and receive different types of tasks to perform with the inclusion of innovations in them. As a result, a synergistic effect is achieved in the perception and use of knowledge, as well as acquisition by students of knowledge and skills sought by modern employers;

✓ Implementation of system interactive control. Through the application of the model, a system interactive control is carried out. Some of the set tasks, tests include immediate feedback with an evaluation of the results of the student's performance. The teacher receives immediate statistical information – group and individual;

✓ A wealth of opportunities for self-training of students. The interactive textbook included in the model provides excellent opportunities for students' self-training;

✓ Through the application of the model, a new pedagogy is developed. The knowledge that the teacher must have is not limited to the field in which he teaches, but is also related to the need to have computer skills and skills to combine different interactive elements in an order and way that facilitates perception.

CONCLUSION

The application of innovations in the learning process also encounters some barriers that should be considered. Some of them are: “time for preparation of innovative methods, which is not taken into account in teaching workload and career development; access to digital devices with appropriate technical parameters that are required to use the relevant applications and programs; preparation of practical case studies (related to the functioning of business and public administration) and project tasks, which is not taken into account in the teaching workload and career development...” (Atanasova, Krastev, 2021, p.138)

Undoubtedly, innovations applied in training will continue to develop. I believe that in the future, the efforts of higher education institutions will be directed toward developing online and hybrid learning. Along with this, artificial intelligence will also find a lasting presence in higher education.

Virtual And Augmented Reality will also be more and more actively present in the learning process. Depending on the innovations that are implemented in education, the higher education institution will be attractive or unattractive to the candidate students and students. In this sense, the more and more diverse the innovations in the education of a higher education institution, the more competitive it will be.

The proposed model for implementing innovations in education is universal and open. The model can be applied not only in the training process in higher education, but also by training consulting companies, as well as by companies for conducting company training.

The model for implementing innovations in training can be further developed depending on the technological progress and the innovativeness of the trainers.

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