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Research Article

THE SYSTEM OF ORGANIZING SOFTWARE FOR TRAINING SPECIALISTS IN THE FIELD OF INFORMATION AND COMMUNICATION TECHNOLOGIES ON PROFESSIONAL-CREATIVE COMPETENCIES

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ABSTRACT

This article addresses the issues of using software to develop professional-creative competencies in the process of training specialists in the field of information and communication technologies (ICT). This system is aimed at shaping the creative abilities of students in the field of ICT and integrating the theoretical knowledge acquired in the educational process with practical skills. The article discusses methods for creating software systems and their application in the educational process, as well as the possibilities of implementing innovative technologies to enhance the effectiveness of the process of developing professional-creative competencies. At the same time, the article concludes with the advantages of this system, its methods of application, and its significance in enhancing the professional training of specialists in the field of ICT.

KEYWORDS

Information and communication technologies, professional-creative competencies, software, educational process, innovative technologies, specialist training, ICT education, professional training.

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INTRODUCTION

In the field of Information and Communication Technologies (ICT), the development of professional and creative competencies plays a crucial role in the modern educational process. In today's digital era, specialists are required not only to have theoretical knowledge but also practical skills and the ability to demonstrate creative approaches. Therefore, the creation and implementation of software systems aimed at developing professional and creative competencies in the education system are urgent. These software systems provide students with the opportunity to reinforce theoretical knowledge with practice, engage in independent creative activities, and enhance their professional skills [1].

In the training of specialists in the field of Information and Communication Technologies (ICT), the formation of professional and creative competencies is one of the main goals of the modern education system. Today, ICT specialists are expected to have not only theoretical knowledge but also practical skills and a creative approach. Therefore, developing and implementing software to enhance professional and creative competencies is one of the urgent tasks.

Professional and creative competencies refer to the ability to carry out professional activities creatively, solve problems effectively, and generate innovative ideas. Three main components play a significant role in this: knowledge, skills, and personal qualities. In the ICT field, knowledge refers to having a technical foundation, skills involve applying knowledge in practice, and personal qualities encompass creativity, initiative, and self-development.

METHODOLOGY

Professional and creative competencies refer to the ability of students to apply theoretical and practical knowledge creatively in their professional activities. These competencies include skills such as creativity, problem-solving, use of innovative technologies, finding new solutions, and critical thinking. Professional and creative competencies consist of three main components: knowledge, skills, and personal qualities. The knowledge component refers to technical knowledge in the ICT field, while skills involve the application of acquired knowledge in practice. Personal qualities include creativity, initiative, and self-development aspects [2].

The demands on creative competencies in the ICT field are linked to technological advancements and innovations. ICT specialists must be able to quickly master new technologies, independently develop software, or improve existing systems with innovative approaches. Creative competencies require specialists to engage in creative thinking, solve problems with original solutions, have analytical and synthetic abilities, as well as work in teams and possess communication skills. These competencies play a key

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role in improving technological processes and finding effective solutions to problems in the ICT field [3].

Advantages of Software Systems in the Development of Professional and Creative Competencies

Software systems designed to develop professional and creative competencies offer several advantages:

1. **Interactivity**: These systems provide students with interactive learning materials, real-life problems, and practical exercises in a virtual environment, making the learning process engaging and effective.
2. **Integration of Theoretical and Practical Knowledge**: Through software, theoretical knowledge is reinforced with practical exercises via interactive simulations, helping students gain a deeper understanding.
3. **Individual Approach**: Automated systems analyze each student's knowledge level and offer personalized learning programs.
4. **Development of Creative Abilities**: Software systems present tasks that encourage creative thinking, such as developing algorithms, creating new software applications, or solving technological problems.
5. **Continuous Monitoring**: These systems allow teachers to track students' progress and provide necessary feedback.

Implementation Phases

To develop and implement software systems aimed at enhancing professional and creative competencies, attention should be paid to the following stages:

1. **Analysis and Identification of Requirements**: Defining the requirements for software based on the analysis of students' needs and educational goals.
2. **Designing Software**: Developing a software system aimed at improving professional and creative competencies, integrating theoretical materials, practical exercises, tests, and other functions.
3. **Testing and Adjustment**: Testing the developed system and refining it based on feedback from students.
4. **Implementation and Support**: Integrating the software into the educational process, training teachers to use the system, and regularly updating the system.

Demands on Modern ICT Specialists

Today, the demands on ICT specialists have significantly increased due to the rapid development of technology and the growth of the digital economy. In addition to technical knowledge and skills, modern ICT specialists are required to possess quick adaptation, independent learning abilities, creative thinking, analytical skills, and digital literacy. Furthermore, they must always seek innovation, follow global trends, and apply innovative approaches to solve various problems. It is also essential for them to have experience working with modern software and platforms [4].

RESULTS

In the educational process for ICT, software systems play a key role in making the learning process

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interactive and effective. These software systems provide students with visual explanations of topics, offer practical exercises, and strengthen theoretical knowledge with hands-on practice. The application of software systems in ICT education benefits both students and teachers. These systems allow for the individualization of the learning process, tracking students' progress, and offering personalized advice. Moreover, these programs provide students with the opportunity to reinforce their knowledge through test exams, virtual laboratory exercises, and interactive problem-solving materials [5].

The introduction of such systems into the educational process leads to the following results:

- Students' theoretical knowledge and practical skills are harmonized.
- Creative thinking, innovative approaches, and problem-solving abilities are developed.
- Independent learning and self-assessment skills are formed.
- The educational process is individualized, and its effectiveness is enhanced.

In the future, these systems may be enriched with artificial intelligence and machine learning technologies, which will optimize the learning process and offer students tailored educational paths.

Using software in ICT education enhances the efficiency of the learning process. Through these systems, students find the learning process more interesting and easier, enabling them to understand complex topics quickly and accurately. Software also helps students develop independent working skills and facilitates faster and more efficient learning. Moreover, interactive educational technologies help develop professional competencies such as teamwork, problem-solving, and critical thinking. These systems also allow teachers to monitor the effectiveness of lessons, assess students' individual achievements, and offer additional support. As a result, the overall efficiency of the learning process significantly improves, and students' professional readiness increases [6].

Innovative Technologies in the Development of Professional and Creative Competencies

Innovative technologies play an important role in organizing an effective educational process, making the learning experience more engaging and interactive. In the development of professional and creative competencies, innovative technologies contribute to the enhancement of students' creative abilities, independent learning skills, and problem-solving capabilities. By applying modern technologies in ICT education, students acquire both theoretical knowledge and practical skills.

Modern Demands and Solutions

Modern ICT specialists must be able to adapt quickly to technological changes, independently create software, and find innovative solutions. To develop these competencies:

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1. **Educational Platforms and Tools:** It is necessary to use interactive online platforms, virtual laboratories, and software that organize algorithmic exercises.
2. **Creative Projects:** It is important to provide students with opportunities to develop creative projects aimed at problem-solving.
3. **Assessment and Monitoring System:** Implement automated systems to regularly assess students' knowledge and skills and identify their strengths and weaknesses.

DISCUSSION

Modern technologies create great opportunities for the development of professional and creative competencies. For example, through online platforms, students can collaborate on projects, solve problems, and develop critical thinking skills. AI-based systems provide students with individual learning pathways and help develop a creative approach to problem-solving. Innovative technologies offer extensive opportunities for reinforcing theoretical knowledge and enhancing practical skills [9].

The Role of Digital Resources in ICT Education

Digital resources have become an integral part of ICT education. Electronic textbooks, online databases, interactive simulations, and multimedia content make the process of acquiring new knowledge easier for students. Digital resources enrich the educational process, providing students with quick and convenient access to information. For example, students can use digital resources to independently learn additional material during their study of a specific topic. This significantly contributes to the development of professional and creative competencies and enhances students' ability to learn independently [12].

The Role of Innovative Technologies

Innovative technologies are tools that open up new possibilities in the educational process. Virtual reality (VR), augmented reality (AR), and artificial intelligence make it possible to explain complex topics in a visual way. These technologies are essential in engaging students in the educational process and developing their creative thinking.

CONCLUSION

Developing and implementing software systems aimed at enhancing professional and creative competencies is crucial in training specialists in the field of Information and Communication Technologies. These systems help students reinforce theoretical knowledge with practice, generate creative solutions, and adapt to technological innovations. As a result, the new generation of ICT specialists will be able to carry out their activities successfully and effectively in their professions.

Innovative technologies are technological solutions that strengthen students' knowledge by integrating new methods and tools into the educational process. Today, technologies such as VR, AR, AI, online platforms, and mobile apps are being implemented in education. These technologies offer students an

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interactive, individualized learning experience, helping them gain a deeper understanding compared to traditional teaching methods. For example, with AR and VR technologies, students can learn complex topics in a visual and engaging way [8].

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