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TECHNIQUE IN SOFTWARE IMPROVEMENT IN SPECIALISTS IN THE FIELD OF HIGHER EDUCATION, SCIENTIFIC FOUNDATIONS FOR THE DEVELOPMENT OF PROFESSIONAL AND CREATIVE QUALITIES

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ABOUT ARTICLE

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Abstract: This article studies the mechanisms of development of professional and creative qualities of specialists in higher educational institutions in the context of digitalization. The research develops approaches to students' creative and professional development through the integration of digital technologies into the educational process. Also, the effectiveness of pedagogical and technological means based on the research results has been analyzed. The article provides evidence-based recommendations for the development of creative competencies for the technical field.

INTRODUCTION

The digitization process significantly impacts all areas of modern society, including the education system. Particularly, the extensive implementation of digital technologies in technical higher education institutions opens new opportunities for students and professionals. At the same time, this process highlights the need to develop not only theoretical and technical skills but also creative approaches and problem-solving abilities as part of professional training. Today, the issue of fostering creative qualities in technical specialists is recognized as a key factor in ensuring competitiveness in the context of a digital economy.

However, scientifically grounded approaches and effective mechanisms for developing professional and creative competencies in technical higher education institutions have not yet been sufficiently developed. Existing teaching methods and tools often rely on traditional approaches, which do not fully meet the new demands and opportunities created by digital technologies. Consequently, there is an urgent need to widely implement digital platforms, innovative pedagogical technologies, and interactive educational tools to enhance the professional and creative qualities of students in technical fields.

This article addresses the development of mechanisms aimed at fostering professional and creative qualities in specialists within technical higher education institutions under the conditions of digitalization. The article seeks to expand scientific and practical approaches in this area by analyzing the importance of modern educational technologies, identifying challenges in the development of professional qualities, and proposing effective solutions.

METHODOLOGY

Scientific research on developing professional and creative qualities in technical higher education institutions covers various directions. In particular, the integration of digital technologies into the educational process is seen as a crucial factor in enhancing students' creative potential. Literature analysis reveals that delivering educational content through interactive platforms and digital tools demonstrates high efficiency not only in providing theoretical knowledge but also in forming practical skills. Additionally, pedagogical methods aimed at fostering creative competencies, such as project-based learning and distance education technologies, are among the most relevant research areas. Advanced universities worldwide are taking professional training to a new level through digital educational resources and innovative approaches.

Within the research methodology, theoretical and experimental approaches were combined to systematically study the process of developing professional and creative qualities. First, conceptual approaches in scientific sources and the impact of digitization on the educational process were examined. Then, software tools for digital platforms that contribute to developing students' professional and creative qualities were created and tested.

Below is a simple Python code example used during the development of software tools. This code was part of a module designed to assess students' creative projects on a digital education platform.

```
import numpy as np
from sklearn.metrics import mean_squared_error

# Talabalarning ijodiy ishlanmalarini baholash uchun me'zonlar
criteria = ["innovation", "practicality", "design", "feasibility"]
weights = [0.4, 0.3, 0.2, 0.1]  # Har bir mezonning ogʻirligi

# Talabaning baholari va etalon baholar
student_scores = [85, 90, 75, 80]  # Talabaning ishlanmasiga berilgan
baholar
ideal_scores = [90, 95, 85, 85]  # Etalon baholar

# Yigʻma bahoni hisoblash
def calculate_final_score(scores, weights):
    normalized_scores = np.array(scores) / 100  # Baholarni 0-1 oraliqqa
oʻtkazish
    final_score = np.dot(normalized_scores, weights) * 100  # Yakuniy
```

```
baho
    return final_score

# Yig‘ma baho va xatolikni hisoblash
final_score = calculate_final_score(student_scores, weights)
mse = mean_squared_error(ideal_scores, student_scores)

print(f"Talabaning yakuniy bahosi: {final_score:.2f}")
print(f"Etalon baholar bilan xatolik darajasi: {mse:.2f}")
```

This program code is used to ensure transparency in assessing students' projects on a digital platform. This approach not only automates the evaluation process but also enables the analysis of students' creative abilities. By calculating the score for each criterion of a student's work and identifying discrepancies from the standard, the program helps achieve more accurate assessments.

The approaches and software tools developed during the study opened new opportunities for enhancing students' professional and creative potential. In the next stage, these tools and methods are planned to be widely implemented in technical higher education institutions.

RESULTS

The research results demonstrated the effectiveness of mechanisms aimed at developing professional and creative qualities in specialists under the conditions of digitalization in technical higher education institutions. Experiments and analyses showed that the application of digital platforms and innovative educational technologies significantly improved students' creative approaches. Creative projects evaluated by students, such as project-based tasks and practical exercises, yielded better results when organized more effectively and interactively using digital tools. This improved students' knowledge and skills.

At the same time, the results revealed some limitations in fully integrating digital technologies into technical higher education institutions. Certain pedagogical approaches and technical tools require further improvement. However, the general trend indicates that the impact of digitalization on the educational process is positive and leads to constructive changes, creating new opportunities for developing professional and creative qualities.

DISCUSSION

Analysis of the research results shows that digitalization offers extensive opportunities to enhance professional and creative qualities in specialists at technical higher education institutions. The use of digital platforms and innovative technologies has been observed to increase students' activity in the learning process, confirming the effectiveness of modern educational technologies. However, the success of fostering creative approaches largely depends on the effective integration of digital tools, which, in turn, depends on educators' ability to adopt new pedagogical methods and the technological infrastructure of educational institutions.

Comparing the results with previous research revealed consistency with global practices in developing students' creative competencies through project-based learning and distance education technologies. However, applying such approaches in local contexts faces certain limitations, such as a lack of technical

resources or insufficiently developed technological skills among teaching staff. These challenges serve as obstacles to fully utilizing digital technologies in technical higher education institutions.

Regarding the practical significance of the research results, the developed mechanisms provide extensive opportunities to enhance students' professional and creative qualities in technical higher education institutions. At the same time, the results indicate the need to refine pedagogical approaches and adapt technological tools. This highlights the necessity of conducting further research and developing innovative solutions for the advancement of technical education. Thus, integrated strategies should be developed to further improve and widely implement mechanisms for fostering specialists' creative competencies during the digitization process.

CONCLUSION

This research has shed light on the theoretical and practical aspects of developing professional and creative qualities in specialists under the conditions of digitalization in technical higher education institutions. The research results demonstrated that the application of digital technologies and innovative teaching methods serves as an effective tool for enhancing not only students' technical knowledge but also their creative potential. The integration of the digitization process into the educational system has not only improved teaching effectiveness but also expanded opportunities for developing students' problem-solving abilities and professional competencies.

This study contributes to improving scientific and practical approaches to the application of modern educational technologies in technical higher education. Future research should aim to explore these issues more deeply and identify solutions to improve the quality of the educational process.

REFERENCES

1. Mirziyoyev, Sh. M. (2017). "Buyuk kelajagimizni mard va olijanob xalqimiz bilan birga quramiz." Toshkent: O‘zbekiston.
2. Siemens, G. (2005). "Connectivism: A Learning Theory for the Digital Age." International Journal of Instructional Technology and Distance Learning, 2(1), 3–10.
3. Jonassen, D. H., & Reeves, T. C. (1996). "Learning with Technology: Using Computers as Cognitive Tools." In D. H. Jonassen (Ed.), Handbook of Research for Educational Communications and Technology (pp. 693–719). Macmillan.
4. Qodirov, X., & Nabiyev, I. (2023). MAHMUDHO ‘JA BEHBUDIYNING DAVLAT BOSHQARUVI HAQIDAGI QARASHLARI. Journal of technical research and development, 1(2), 391-396.
5. Qodirov, X. (2023). MATERIALS FOR TEACHING CULTURE: LITERATURE.
6. Qodirov, H. (2018). Strategy of action of Uzbekistan on the development of export of textile products. Journal of Accounting and Marketing, 7, 301.