CURRENT RESEARCH JOURNAL OF PEDAGOGICS
(ISSN –2767-3278)
VOLUME 03 ISSUE 10 Pages: 07-14
SJIF IMPACT FACTOR (2021: 5. 714) (2022: 6. 013)
OCLC – 1242041055 METADATA IF – 8.145
Publisher: Master Journals

Journal Website: https://masterjournals.com/index.php/crjp

Research Article

PEDAGOGICAL ESSENCE AND MODEL OF TECHNOLOGICAL COMPETENCE DEVELOPMENT IN FUTURE ENGINEERS

Submission Date: October 01, 2022, **Accepted Date:** October 05, 2022,
Published Date: October 09, 2022
Crossref doi: https://doi.org/10.37547/pedagogics-crjp-03-10-02

Umirov Ilhom Iskandar O'g'li
Jizzakh Pedagogical Institute Senior Teacher Of The "Transportation Engineering" Department, Uzbekistan

ABSTRACT

Pedagogical factors of development of technological competence of students of higher educational institutions with the help of electronic educational tools are considered in this article. The components of the didactic support system for electronic educational tools are highlighted. The model of the advantages of organizing education based on electronic educational tools and the main problems of organizing the educational process with the help of electronic educational tools are shown.

KEYWORDS

Electronic educational tools, continuous education, program, textbook, multimedia, electronic work, electronic portfolio, electronic tests, electronic databases, electronic tasks, electronic simulators, electronic textbooks, electronic tables.

INTRODUCTION

Students of technical higher education institutions require the training of qualified specialists who have the flexibility of thinking and the mobility of decision-making, who can revise the accumulated experience

CURRENT RESEARCH JOURNAL OF PEDAGOGICS
(ISSN –2767-3278)
VOLUME 03 ISSUE 10 Pages: 07-14
SJIF IMPACT FACTOR (2021: 5. 714) (2022: 6. 013)
OCLC – 1242041055 METADATA IF – 8.145
Publisher: Master Journals

and advanced ideas, who are able to design the production process based on modern technologies. From this point of view, it is clear that it is necessary to train students in a systematic and purposeful manner in order to use electronic tools in the process of education and training in order to become modern specialists.

The increased interest in the development of new educational technologies and modern electronic educational tools in the field of science is due to:

- to harmonize the existing theories of teaching with the requirements of the modern practice of teaching and educating students, to give them a rapid character in terms of the modern goals and tasks of education;

- introduction of the most effective forms of teaching methods that encourage active independent activity of students in the development of new knowledge;

- renewal of the professional activity of the professor-teacher based on the idea of complete management of the educational process, visibility and reproducibility of the educational cycle.

"The peculiarity of technological competence is that such an educational process is developed and implemented in it, which should guarantee the achievement of the technological construction of the educational process that is consistently focused on clearly defined goals." These goals are determined based on the content of the studied subject or subject, the interrelated activities of professors and students, as well as the internal processes of the student's personality development. Learning goals within the framework of technological competence are formed through learning outcomes expressed in students' actions. This allows you to focus on what's important, clarify goals, and create benchmarks for evaluating learning outcomes.

It is known that the introduction of electronic educational tools into the educational process of higher education institutions, if they can use them in reading and learning, it creates an opportunity to develop interest and qualities in the profession.

The totality of professional theoretical knowledge, practical skills, professionally important qualities tested in the experience is considered as technological competence.

A number of studies are devoted to the general characteristics of the technological competence of modern personnel and offer different approaches to determining its essence, structure and content.

Effectiveness of using modern e-learning technologies by professors and teachers, according to research scientists, is determined by the availability of technological processes. The importance of technological competence in the professional activity of students cannot be overestimated in the conditions of widespread introduction of electronic educational tools into the educational process of higher education institutions.

We consider technological competence to be an indispensable professional and personal characteristic of students, which includes: knowledge about technologies, a set of technological skills, and personal qualities of professional importance.

This understanding of the nature of technological competence of students leads to the conclusion that it can be manifested and formed directly in the process of production activity, that is, in the process of gaining experience. At the same time, some of its components can be formed in the educational process of improving students' knowledge. The formation of technological competence is a subsystem of professional training aimed at developing the ability to perform highly efficient production activities.

CURRENT RESEARCH JOURNAL OF PEDAGOGICS
(ISSN –2767-3278)
VOLUME 03 ISSUE 10 Pages: 07-14
SJIF IMPACT FACTOR (2021: 5. 714) (2022: 6. 013)
OCLC – 1242041055 METADATA IF – 8.145
Publisher: Master Journals

Thus, the formation of technological competence is considered by us as a complex, controlled process of assimilation of new knowledge by an individual, as well as professional activity experience in a specially organized educational process.

In order to comprehensively consider the process of formation of technological competence of future mechanical engineers as an integral system and its components, we use the method of modeling as a scientific method of knowledge.

The concept of "model" has an ambiguous interpretation, but two of the various meanings are most common in the scientific literature:

1) model as an object analogue;

2) a model as an example.

Among the basic definitions, we consider the following definition of the pedagogical model to be important: "A generalized, abstract-logical image of the specific phenomenon of the pedagogical system, presented in the required visual form and able to give something new, reflecting and expressing the important structural and functional relations of the object of pedagogical research, knowledge about the object of research". We believe that it is necessary to form a technological competence that demonstrates the process as a system that supports and reveals its internal structure.

In connection with the change of educational paradigms with the transition to a competency-based approach, there was a need to use innovative pedagogical methods, including modeling. The methodological importance of modeling is that it reflects new knowledge that appears in the educational process and practice in terms of tools, methods and forms of activity. In this, it consists of building models of real-life objects of phenomena and building objects to determine or improve their properties, to update their construction methods, to control them, etc. Modeling made it possible to simulate the main features of the studied object.

The system-activity approach allows for the analysis, research and development of the process of technological development, as a result of which students actively participate in setting goals, creating content, planning activities, reflective analysis of their results, organizing and regulating them.

The essence of the competency-based approach is that it involves a radical renewal of the professional training process based on the distribution of special competencies that ensure the readiness of future personnel to perform professional tasks, continuous learning and self-learning throughout their life.

The technological approach is important in that the model of formation of technological competence is strictly scientifically based, it is planned and consistently implemented as a result, it monitors the obtained results, and also it is the exact repetition of engineering actions that guarantee success.

In the scientific research work of V.A. Shtoff, the concept of a model is indicated by four signs:

- model is a mentally expressed or materially implemented system;
- the model repeats or reflects the object of study;
- the model can replace the object;
- the model provides new information about the object.

The mentioned signs are of fundamental importance in pedagogical studies of modeling. It consists in finding and updating the optimal system of forms, methods and means of pedagogical influence of the knowledge

CURRENT RESEARCH JOURNAL OF PEDAGOGICS
(ISSN –2767-3278)
VOLUME 03 ISSUE 10 Pages: 07-14
SJIF IMPACT FACTOR (2021: 5. 714) (2022: 6. 013)
OCLC – 1242041055 METADATA IF – 8.145
Publisher: Master Journals

obtained in the process of building the model. Modeling allows a comprehensive approach to the study of the effective influence of the pedagogical process on the formation of technological competence.

A methodological guideline for building a formation model requires the use of a systematic approach. This approach to research allows us to consider the pedagogical process as subject to the integrity of a number of components and the general law of the organizational structure and activity of any system.

The proposed model includes the following features of a systematic approach: the completeness of the components involved in achieving the goal; the existence of dependence and dependence between components; the presence of the leading idea of the components necessary for unification, the presence of the leading link is the manifestation of common qualities in the components.

The initial state in the design of the model describes the idea of developing professional (general professional) and technological competencies during the entire period of training of a future mechanical engineer bachelor.

We have identified the following principles for organizing the process of developing the technological competence of future engineers.

1. The principle of consistency, which ensures the overall organization of the process of developing the technological competence of future engineers based on all its components: goals, content, methods and forms of organizing various types of activities.

2. The principle of humanistic and professional orientation of the model is to develop an active creative position of students in relation to their future professional activities based on modern educational technologies as a prerequisite for the intellectual, moral and professional development of a future engineer.

3. The principle of flexibility of the model in the changing educational space, which allows to take into account the orientation of the person, the individual characteristics of the student, his interests when choosing teaching tools and methods, as well as the needs of a modern primary school.

4. The principle that implies the dynamism of the model, its development, constant change and filling with new content. In the implementation of this principle, the transition from one level of technological competence to another is ensured with the tendency to improve the quality of the result.

5. The principle of variability of the model, which provides an opportunity for the development of various options for the content of education, the use of modern modern electronic educational tools to increase the effectiveness of education, the scientific development and theoretical justification of new ideas and technologies.

The components of the model are motivational-valuable, meaningful-informative, procedural-active, control-effective.

The motivational-value component includes the formation of a professional-value attitude towards engineering activities, the realization of the need to use modern teaching technologies in the educational process, and the creation of a motivational background for the formation and development of technological competencies:

• direct interest in the process and results of acquiring knowledge about modern transport technologies;

CURRENT RESEARCH JOURNAL OF PEDAGOGICS
(ISSN –2767-3278)
VOLUME 03 ISSUE 10 Pages: 07-14
SJIF IMPACT FACTOR (2021: 5. 714) (2022: 6. 013)
OCLC – 1242041055 METADATA IF – 8.145
Publisher: Master Journals

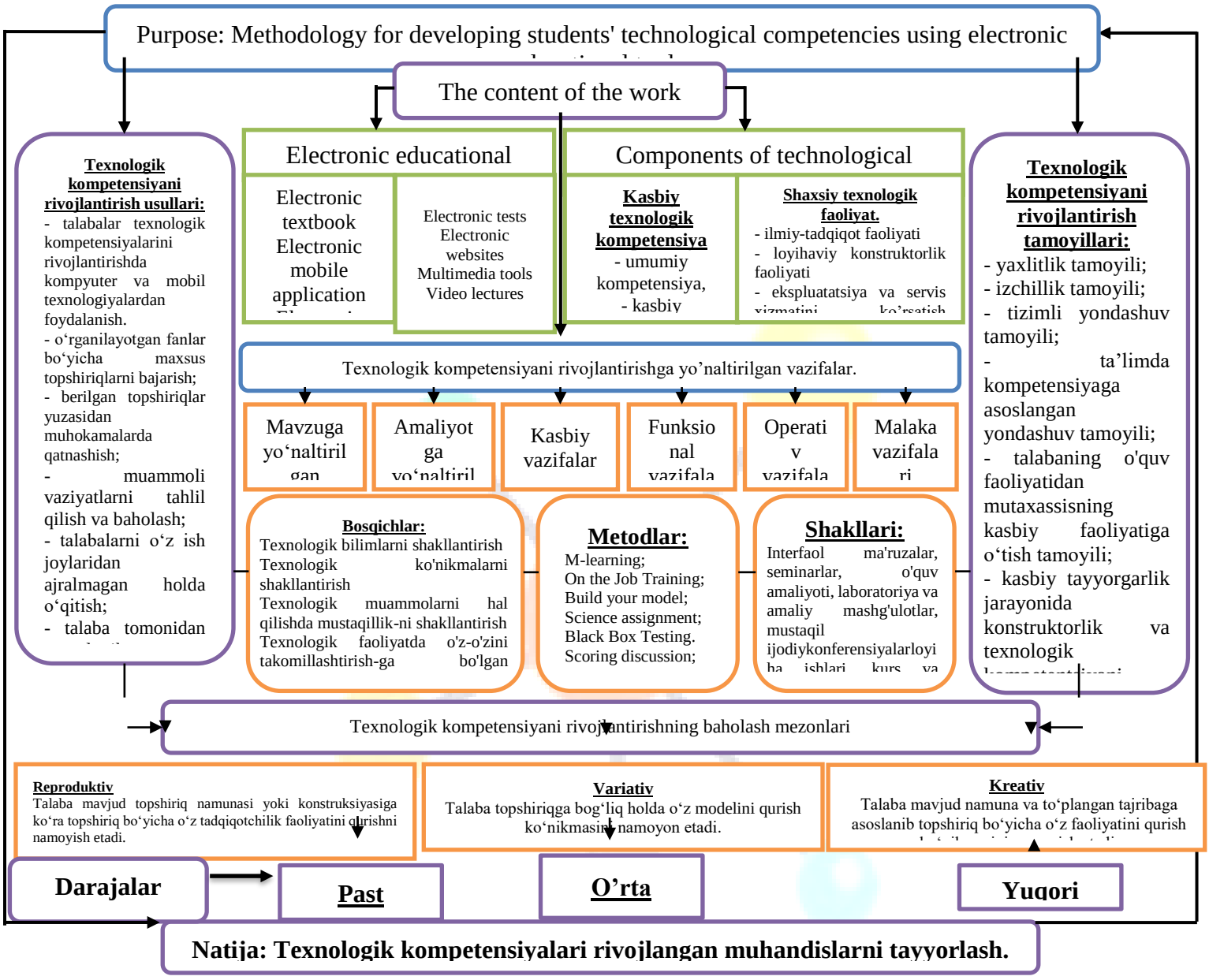
• striving for creative application of knowledge, striving to create new transport systems, technological processes and learning situations;

• willingness to master technological competence to achieve high level of professionalism in future professional and engineering activities.

The content - information component is aimed at forming deep, systematic knowledge about the essence and specific features of educational technologies for future personnel. Also, it is designed to ensure the development of a person's special professional and technological direction, professionally important knowledge, skills and qualifications as a subject of engineering activities of the future personnel.

We have widely used e-learning tools to improve the methodology of research work. Educational principles, methods and didactic tools aimed at developing students' technological competence were widely used. Thus, for the development of students' technological competence, we will consider the content, technological and objective parts of the didactic model developed by us on the example of specialized subjects.

CURRENT RESEARCH JOURNAL OF PEDAGOGICS
(ISSN –2767-3278)
VOLUME 03 ISSUE 10 Pages: 07-14
SJIF IMPACT FACTOR (2021: 5. 714) (2022: 6. 013)
OCLC – 1242041055 METADATA IF – 8.145
Publisher: Master Journals



In this model, in the development of the conditions for the implementation of the modeling method in the development of technological competences of students and the development of the organization method, we first clarified the types of professional activities of bachelors according to the qualification requirements of future engineers. They are types of activities such as: scientific research, design and construction, operation and service provision, production, organization and management. We have developed stages, methods and forms of developing students' technological competences.

CURRENT RESEARCH JOURNAL OF PEDAGOGICS
(ISSN –2767-3278)
VOLUME 03 ISSUE 10 Pages: 07-14
SJIF IMPACT FACTOR (2021: 5. 714) (2022: 6. 013)
OCLC – 1242041055 METADATA IF – 8.145
Publisher: Master Journals

In addition, we used modern educational methods, e-learning tools, websites and computer technologies to develop students' technological competencies.

In the implementation of these didactic conditions, we used a website and computer programs designed for the development of students' technological competencies.

Under the model of the step-by-step formation of the technological competence of the students of the educational direction of transport vehicles, it is necessary to understand the whole pedagogical process, which reveals the theoretical essence of the internal structure and reflects the stages of the formation of technological competence.

The model that we considered means the systematic and purposeful organization of preparing students for the use of electronic educational tools that ensure the high efficiency of engineering activities in the educational process of higher educational institutions.

In conclusion, it was found that the process model of the development of technological competences consists of the following principles typical for the pedagogical process: the principle of integrity, the principle of consistency, the principle of a systematic approach, the principle of a competency-based approach to education, the principle of the transition from a student's educational activity to the professional activity of a specialist, the principle of controlling the process of developing constructive and technological competence during professional training. Based on established scientific-theoretical conditions and conceptual rules, a model of development of technological competences of future engineers was developed with the help of electronic educational tools.

REFERENCES

1. Decree of the President of the Republic of Uzbekistan dated October 8, 2019 No. PF-5847 "On approval of the concept of development of the higher education system of the Republic of Uzbekistan until 2030".
2. Decision No. PQ-3775 of the President of the Republic of Uzbekistan dated June 5, 2018 "On additional measures to increase the quality of education in higher education institutions and ensure their active participation in comprehensive reforms implemented in the country."
3. R. Hamdamov, U. Begimkulov, N. Taylakov. (2010). Information technologies in education. Study guide for higher educational institutions. UzNU state scientific publishing house, 120 p.
4. Dyachenko, S. A. (2007). Electronic teaching aids in the activities of the teacher. Central Russian Bulletin of Social Sciences, (2).
5. Pulatova, D. T. (2015). Pedagogical conditions of introducing electronic information educational resources into the educational process. Sovremennoe obrazovanie (Uzbekistan), (7).
6. Yoldoshev J.G'. and others (2008). Interactive education quality assurance. - T.: "UNICEF".
7. A.V. Shatnikh, S.F. Ekhov. ICT in education: a look through the prism of transformations // Educational Technologies and Society (Educational Technology & Society). - 2012. - V. 15, No. 3. - S. 392–414.
8. Askarov, I. B. (2017). Management and planning of the process of formation of research skills and abilities of future teachers of vocational education. School of the Future, (2), 10-15.

CURRENT RESEARCH JOURNAL OF PEDAGOGICS
(ISSN –2767-3278)
VOLUME 03 ISSUE 10 Pages: 07-14
SJIF IMPACT FACTOR (2021: 5. 714) (2022: 6. 013)
OCLC – 1242041055 METADATA IF – 8.145
Publisher: Master Journals

9. Askarov, I. B. (2017). Basic approaches and principles of preparing future teachers of vocational training for research activities. Current Research in the Modern World, (2-6), 25-32.
10. Askarov, I. B. (2016). Preparation for research activities of the future teacher of vocational training. In Teaching Excellence (pp. 39-42).
11. Umirov, I., & Khamrakulov, Yo. (2021). Specific features of electronic education and their comparative analysis. Society and innovation, 2(10/S), 555-560.
12. Daniyarovna, H. S. (2021). The Contents of Students' Independent Education and Methods of Implementation. Psychology and Education Journal, 58(2), 1445-1456.
13. Iskandarovich, U. I. (2021). Theoretical Fundamentals of Introduction of Electronic Educational Tools to the Educational Process. Central asian journal of theoretical & Applied sciences, 2(1), 1-7.