

EFFECTIVENESS OF IMPROVING STUDENTS' KNOWLEDGE ABOUT THE BASICS OF THE CONCEPT OF TECHNOLOGICAL DETERMINISM

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Introduction

It is important to analyze and generalize the results obtained in the process of developing knowledge about the basics of the concept of technological determinism among students of technical higher education institutions, and to develop a methodology for determining the level of efficiency. Accordingly, one of the important conditions for determining the effectiveness of the pedagogical system aimed at developing students' knowledge of the basics of the concept of technological determinism is the correct organization of experimental work. Experimental trials include highlighting, grounding and formative stages. Based on these stages, the effectiveness of developing knowledge about the basics of the concept of technological determinism among students of technical higher education institutions is compared.

It was determined during the experimental work that the ideas expressed in the theoretical part of the research work were combined with practical developments, comprehensive analysis of the existing pedagogical process, elimination of identified shortcomings and enrichment of achievements. Accordingly, special attention was paid to the development of a program that includes a system of special indicators in order to effectively organize the experimental and test work carried out. On the basis of this program, the indicators ensuring the expediency of experimental work carried out on improving the knowledge of the basics of the concept of technological determinism among students of technical higher education institutions, as well as the methodology for determining the effectiveness of experimental work were highlighted [5-9].

The main goal of this program is to determine the practical aspects of increasing the efficiency of experimental work and the most optimal forms, methods and tools based on the research concept, object, subject, tasks and advanced scientific hypotheses. consists of defining [10-17].

During the experimental work, the following pedagogical tasks were solved:

1. Test sites have been determined.
2. Trial periods and stages were determined and specific tasks to be performed at each stage were defined.
3. The number of participants in the experimental process, i.e. respondents, was determined and divided into experimental and control groups.
4. The respondents were informed about the implementation of experimental work.
5. Those responsible for organizing experimental work have been identified.

6. Preliminary developments were prepared as experimental materials, and their content was discussed at the meetings of the university councils as a research base.
7. Pedagogical possibilities of the "Basics of Technological Determinism" modular course program in the field of "Social and humanitarian sciences" were studied.
8. With the help of methods such as questionnaires, tests, conversation, interviews, observation, and sociological research, it was found that students of technical higher education institutions have developed knowledge about the basics of the concept of technological determinism.
9. Acceptable forms, methods and tools used in the process of improving knowledge of the basics of the concept of technological determinism among students of technical higher education institutions were determined.
10. The developed methodology was tested in the course of the emphatic experiment and its results were analyzed.
11. To determine the effectiveness of the developed methodology. For this purpose, the methodology presented in the classroom and non-auditory training was used in the test areas, which are the object of research, and its effectiveness was determined, and changes were made to its content in necessary cases.
12. Transforming and controlling experiments aimed at improving the knowledge of the basics of the concept of technological determinism among students of technical higher education institutions were consistently organized and conditions were created to ensure their successful completion.
13. Experimental indicators summarizing, highlighting, changing, and controlling the results of the experimental work were compared, a final conclusion was made regarding their effectiveness, and the overall results were processed using the mathematical-statistical method.

Experiments organized for the development of knowledge about the basics of the concept of technological determinism among students of technical higher education institutions were carried out in accordance with the following principles:

- Orientation of experimental work to a specific goal;
- Ensuring the consistency, systematicity and integrity of experimental work;
- Existence of interrelationship between the theoretical foundations of the problem and practical developments;
- That the respondents were able to realize their potential freely;
- Creation of a favourable pedagogical situation for achieving the main goal of organizing experimental work.

The success of experimental work on the development of knowledge about the basics of the concept of technological determinism among students of technical higher education institutions was ensured by creating the following pedagogical conditions:

- That the content of experimental test materials is selected based on the main purpose;
- The selection of didactic tools, forms, methods and methods corresponding to experimental materials;
- That the number of participants in the pilot-testing process can be an indicator for comparing and comparing the number of respondents;
- That the respondents were fully informed about the content of the experimental work;
- The establishment of sincere communication and mutual cooperation between the researcher or the leader-pedagogue responsible for the organization of this activity and the respondents during the implementation of experimental work;
- Creation of the opportunity to communicate with the respondents in order to establish experimental work;
- That the results of experimental work are constantly summarized and analyzed;
- The identification of mathematical and statistical methods that provide the opportunity to re-analyze the general results.
- Special attention was paid to the following during the organization of experimental work:
 1. Achieving personal and professional socialization of students in the process of improving knowledge of the basics of the concept of technological determinism among students of technical higher education institutions.
 2. Relying on complex pedagogical factors in improving knowledge of the basics of the concept of technological determinism among students of technical higher education institutions.
 3. Achieving in-depth assimilation of the scientific foundations of the concept of technological determinism by students.
 4. Achieving the formation of scientific and technical creativity among students of technical higher education institutions based on the development of knowledge about the basics of the concept of technological determinism.

Experimental results and statistical analysis

The reliability of the results of pedagogical experiments depends on the quality of empirical data measurement and the correctness of theoretical conclusions. The criterion of reliability of information was used in the measurement and analysis of empirical data. Reliable information means the absence of theoretical and instrumental (choosing the research unit and measuring their description) errors [18-26]. According to this basis, the tasks of developing the diagnostic program of the experiment were defined. To develop a diagnostic program, it was required to solve the following tasks:

- 1) selection of criteria, indicators and methods of their diagnosis, which make it possible to discuss the state of the object;
- 2) search for clearly defined aspects of criteria and indicators in qualitative analysis;

3) justifying the transfer of quantitative equivalents to quality criteria and indicators, which allows the use of mathematical apparatus for statistical analysis of pedagogical data.

In order to successfully solve the initial task (criteria, indicators, and methods of their diagnosis, which provide an opportunity to discuss the state of the object), we made clarifications based on the concept of criteria and indicators in the second chapter of the study. The following requirements were taken into account when ensuring the reliability of experimental work according to the specified criteria:

- Criteria should be revealed based on a number of indicators;
- Criteria should reflect the dynamic change of quality in time and space.

According to the level of development of knowledge about the basics of technological determinism among students of technical higher education institutions, criteria, indicators and diagnostic methods were defined [24-30].

Flexible methods were used to determine the formation of an axiological attitude, as well as a motive and a reflexive point of view, to the development of knowledge about the basics of the concept of technological determinism among students of technical higher education institutions. The author's methods were used to determine the development of students' knowledge of the basics of the concept of technological determinism.

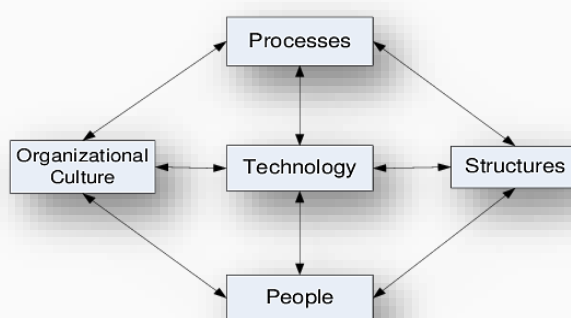


Figure 1. Schematic view of the results of development and statistical analysis of students' knowledge of the basics of the concept of technological determinism

By teaching and analyzing the "Basics of technological determinism" module, the student's knowledge of technology and technological determinism, causal connections in the development of technology will be enriched, and his conclusions about the operation of technology and its possibilities will be expanded. The student will be able to make clear conclusions about the history of man-made civilization, and his ideas about technology will be enriched. In this process The educational importance of developing knowledge about the basics of the concept of technological determinism among students of technical higher education institutions is particularly evident. This makes it possible to assess the social significance and practical effectiveness of the knowledge of the technological determinism concept among technical students.

It is important to analyze and generalize the results obtained during the development of knowledge about the basics of the concept of technological determinism among students of technical higher education institutions, and to develop a methodology for determining the level of efficiency. Accordingly, one of the important conditions for determining the effectiveness of the pedagogical system aimed at developing students' knowledge of the basics of the concept of technological determinism is the correct organization of experimental work. The experimental tests include emphasizing, justifying and formative stages. Based on these stages, the effectiveness of developing knowledge about the basics of the concept of technological determinism among students of technical higher education institutions is compared.

It was determined during the experimental work that the ideas expressed in the theoretical part of the research work were combined with practical developments, comprehensive analysis of the existing pedagogical process, elimination of identified shortcomings and enrichment of achievements. Accordingly, special attention was paid to the development of a program that includes a system of special indicators in order to effectively organize the experimental and experimental work carried out. Based on this program, the indicators that ensure the appropriateness of the experimental work carried out on the development of knowledge about the basics of the concept of technological determinism among students of technical higher education institutions, as well.

Conclusion

The experimental work carried out in the course of the research, as well as the continuous complementarity of theoretical ideas that are important in justifying their essence, the clarity of the purpose of conducting research and experimental work, this is the availability of the methodology that served to ensure the positive result of the goal determined the accuracy of the achieved results.

The results obtained at the emphasis stage confirmed the effectiveness of the conceptual model of improving the knowledge of the basics of the concept of technological determinism among students of technical higher education institutions and the improved spiritual-prophylactic technologies.

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