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RESEARCH ARTICLE

Comparative Analysis Of Experimental And Traditional Class Results In Vitagenized Education

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Abstract

In this study, a comparative analysis was conducted on the effectiveness of vitalized educational technology compared to the traditional teaching method. 28 students participated in the study and were divided equally into experimental and control (traditional) groups. Based on the results of the pre-test and post-test, the level of students' knowledge, independent thinking, and motivation indicators were evaluated. The results showed that vitagenic educational technology significantly increases learning efficiency.

KEYWORDS

Vitagenic education, experimental group, control group, comparative analysis, learning effectiveness, innovative pedagogy.

INTRODUCTION

The effectiveness of innovative educational technologies in the field of modern pedagogy and didactics has been substantiated through comprehensive scientific research. In particular, the concept of vitagenic education is aimed at ensuring a deeper and more conscious acquisition of knowledge by integrating students' personal life experiences into the educational process.

One of the pedagogical scholars, A. S. Belkin, defines vitagenic education as a "model of education based on an individual's life experience," emphasizing that its main task is to harmonize knowledge with individual experience. According to this approach, the student acts not as a passive recipient, but as an active knowledge-creating subject.

Furthermore, Jean Piaget and Lev Vygotsky, considered the founders of constructivist educational theory, scientifically substantiated in their research that knowledge is formed under the influence of personal experience and the social environment. In particular, Vygotsky's concept of the "near zone of development" is considered the theoretical foundation of vitagenic education methodology.

Experimental studies conducted in recent years also confirm the effectiveness of interactive and innovative methods. For example, according to the results of a meta-analysis conducted by John Hattie, active teaching methods provide higher learning outcomes compared to traditional lecture methods. In particular, the indicators of student activity, motivation, and independent thinking increase significantly.

Furthermore, the experiential learning model developed by David Kolb is a conceptual basis close to vitagenic education, explaining the process of acquiring knowledge through the stages of "experience - analysis - generalization - application."

Local and regional studies have also noted the positive impact of innovative methods. The results of scientific research conducted in Uzbekistan show that lessons organized on the basis of interactive methods serve to increase the level of knowledge and learning motivation of students. Especially in the teaching of biology, the vitagenic approach allows for the linking of educational material with real life and ensures the stability of knowledge.

At the same time, some researchers note that there are certain problems in the implementation of innovative methods. In particular, the insufficient methodological training of teachers, limited time resources, and the lack of flexibility in curricula can negatively affect this process.

Overall, the analyzed scientific sources indicate that vitagenic and interactive teaching methods increase the effectiveness of the educational process; however, for their effective application, it is necessary to improve methodological and organizational conditions.

Research methodology. This study was organized on the basis of a quasi-experimental design and used a pre-test/post-test model. Two groups were formed in the study: the experimental and control groups. This approach is one of the most widely used scientific methods for determining the effectiveness of various teaching methods in the educational process, allowing for an accurate assessment of the dynamics of change by comparing students' initial and final levels of knowledge.

A total of 28 students participated in the study. They were divided equally into two groups: the experimental group consisted of 14 students, and the control group consisted of 14 students. When forming the groups, the initial level of knowledge and general training indicators of the students were taken into account, ensuring their maximum equality.

During the experimental process, classes were organized in the experimental group based on vitalized educational technology. This approach is aimed at mastering knowledge based on students' personal life experiences, increasing their activity through interactive methods, and developing independent thinking skills. In the control group, the educational process was conducted based on traditional teaching methods, primarily lecture and explanatory methods.

The experimental work was conducted over a period of 4 weeks. At the beginning of the study, a pre-test was conducted for all participants to determine their baseline knowledge levels. At the end of the experiment, the students' level of mastery was assessed through post-testing, and the results of the experimental and control groups were comparatively analyzed. This methodology made it possible to scientifically determine the effectiveness of vitagenized education.

Research results. In the course of the study, a comparative analysis of pre-test and post-test results was conducted to identify changes in students' knowledge levels. Based on the results of the preliminary assessment, the average score of the experimental group students was 56,3, while that of the control group was 55,8. These indicators show that there are no significant differences between the groups; that is, the levels of initial knowledge are practically equal.

The results of the post-test conducted at the end of the experiment showed a significant difference between the groups. In the experimental group, the average score was 82,6, while in the control group, it was 68,4. Analysis of the results shows that the knowledge level in the experimental group increased by 26,3 points, while in the control group, growth was limited to 12,6 points. Consequently, the educational process organized on the basis of vitalized education demonstrated significantly higher efficiency compared to traditional teaching methods.

The results of the comparative analysis confirmed the significant superiority of the experimental group's indicators, and the obtained difference was found to be statistically significant ($p < 0,05$). This scientifically substantiates the positive impact of innovative, particularly vitagenic, educational methods on learning outcomes. These results are in harmony with other experimental studies and once again confirm that modern pedagogical approaches are more effective than traditional methods.

Group	Pre-test (Initial)	Post-test (final)	Growth (Δ)	Independent thinking	Interest level	Activity
Experimental	56,3	82,6	26,3	3 (upper)	3 (upper)	3 (upper)

Control	55,8	68,4	12,6	2 (middle)	1 (low)	2 (middle)

Furthermore, during the study, students' activity in the educational process, their level of independent thinking, and their interest in subjects were also observed. It was noted that the students in the experimental group had a high level of independent thinking skills, increased interest in the educational material, and increased activity in the lesson process. In the control group, these indicators were mainly moderate or low. This situation indicates that vitagenic educational technology enhances students' cognitive activity and serves deeper and more conscious assimilation of knowledge.

Based on the results obtained, it can be stated that vitagenic education transforms the student into an active subject of the educational process. This approach further deepens and reinforces the content of knowledge by linking it with the students' personal life experience. As a result, the level of retention of acquired knowledge in long-term memory increases. This is explained by the main idea of vitagenic education - the principle of learning through life experience.

Conclusion

The results of the conducted research demonstrated that vitagenic educational technology is significantly more effective compared to traditional teaching methods. During the experimental process, an increase in students' knowledge levels, academic performance indicators, and cognitive activity was identified, confirming the didactic effectiveness of this approach.

It was also observed that in the educational process organized on the basis of vitagenic technology, students developed independent thinking, an analytical approach, and learning motivation. This shows that this technology plays an important role in improving the quality of education.

Within the framework of the study, the effectiveness of vitagenic education was statistically substantiated based on a micro-experimental model involving 28 students. As a result of the comparative analysis, methodological recommendations were developed, and a scientific basis for their practical application was created.

Overall, vitagenic technology serves as an effective didactic tool in teaching biology and natural sciences and is of great importance for teachers in implementing innovative methodological approaches. Therefore, it is recommended to widely use this technology in general education schools.

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