JOURNAL OF MULTIDISCIPLINARY SCIENCES AND INNOVATIONS
VOLUME 04, ISSUE 10
MOPNTHLY JOURNALS
ISSN NUMBER: 2751-4390
IMPACT FACTOR: 9,08

A MODEL OF USING DIGITAL TECHNOLOGIES IN FORMING STUDENTS' GEOGRAPHICAL COMPETENCES

Davronova Laylo
Independent researcher at Sharof Rashidov Samarkand State University

Annotation. This article presents proposals and recommendations for the development of modern approaches to the formation of geographical competencies of secondary school students. Also, in this article, a model for the formation of students' geographical competencies was developed, and its practical effectiveness was proven based on mathematical and statistical analysis.
Keywords: competence, digital education, model, principle, mathematical statistics, experiment, web-quest, Student-Fisher.

Today, due to the widespread introduction of digital technologies into the educational process and the increase in students' interest in computer technologies, there is a need to improve the system of using pedagogical software tools in the organization of the educational and upbringing process in general education schools, including increasing the effectiveness of teaching subjects, and forming students' subject competencies [1].
The proposed research is also aimed at these issues, that is, it is aimed at the use of digital technologies in the formation of geographical competencies of secondary school students.
Therefore, it is necessary to develop an approach aimed at increasing the motivation, interest, creative abilities, and developing creative thinking of secondary school students in geography lessons and extracurricular activities [2, 3]. This, in turn, requires the formation of students' competencies in geography based on a competency-based approach. Therefore, within the framework of the study, a model for the formation of competencies of students in geography based on a competency-based approach was developed (see Fig. 1).

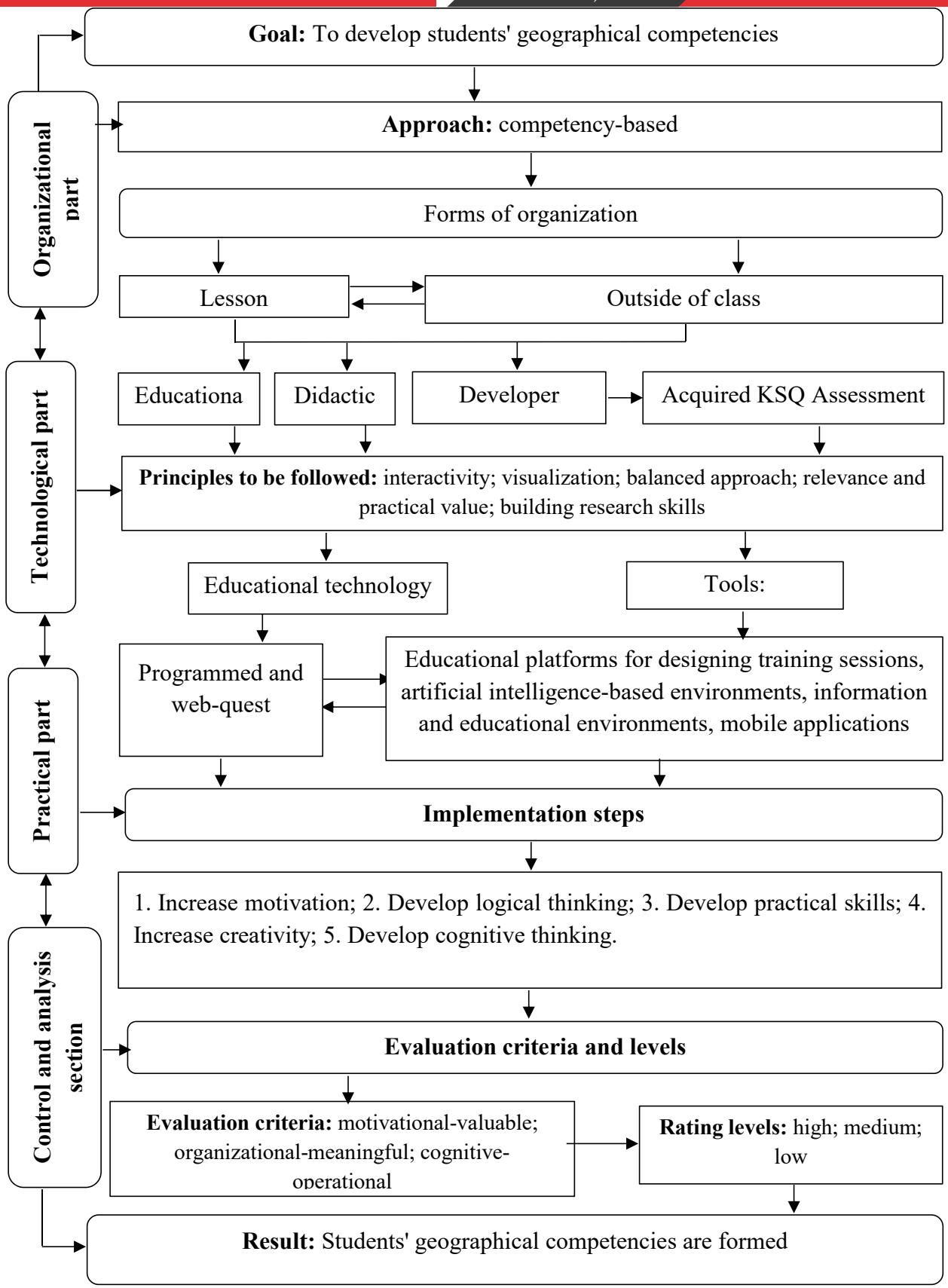
Goal: To develop students' geographical competencies
Organizational part
Approach: competency-based
Forms of organization
Lesson
Outside of class
Technological part
Educationa
Didactic
Developer
Acquired KSQ Assessment
Principles to be followed: interactivity; visualization; balanced approach; relevance and practical value; building research skills
Educational technology
Tools:
Practical part
Programmed and web-quest
Educational platforms for designing training sessions, artificial intelligence-based environments, information and educational environments, mobile applications
Implementation steps
1. Increase motivation; 2. Develop logical thinking; 3. Develop practical skills; 4. Increase creativity; 5. Develop cognitive thinking.
Control and analysis section
Evaluation criteria and levels
Evaluation criteria: motivational-valuable; organizational-meaningful; cognitive-operational
Rating levels: high; medium; low
Result: Students' geographical competencies are formed

Figure 1. Model of using digital technologies in the formation of students' geographical competencies

The proposed model consists of organizational, technological, practical, control and analytical parts. The organizational part of the model proposes the use of a competency-based approach in the formation of students' geographical competencies.

As a methodological guide to the modernization of modern education, the competency-based approach defines new teaching methods and technologies that help develop independence, initiative, creativity and critical thinking in students, directing them to specific, effective results [4]. Also, the introduction of competency-based teaching is considered by modern pedagogy as an important factor in improving the quality and basis of education [5]. The competency-based approach is aimed at increasing the student's success in professional and personal activities and adequately assessing his capabilities in a given situation [4].

In the technological part of the model, it is proposed to rely on the principles used in the formation of students' geographical competencies: interactivity; visualization; balanced approach; relevance and practical value; formation of research skills.

Based on these proposed principles, the idea of using programming, web-quest educational technologies and the integration of educational platforms, artificial intelligence-based environments, information and educational environments, mobile applications to form students' geographical competencies is put forward.

A practical stage of the model has been developed to use the proposed educational technologies and teaching aids. This involves the use of the following stages in the formation of students' geographical competencies:

1. Increase motivation;
2. Develop logical thinking
3. Develop practical skills;
4. Improve creativity;
5. Develop cognitive thinking.

From this perspective, it has become a serious necessity to widely implement modern approaches to the formation of geography competencies of secondary school students.

Thus, in order to determine the level of effectiveness of the model developed for the formation of geographical competencies of secondary school students, pedagogical experimental and testing work was carried out. Pedagogical experimental and testing work was carried out in secondary schools. The sample of secondary school students was divided into experimental (123) and control (124) classes. When dividing students into experimental and control classes, special attention was paid to the uniformity of their knowledge level. Their indicators at the beginning of the experiment are presented in the table below (see Table 1).

Table 1

Evaluations of students in the experimental and control classes at the beginning of the experiment

Classes	**Number of pupils**	**Grades of pupils in the experimental and control classes**			
		5 (Excellent)	4 (good)	3 (satisfactory)	2 (unsatisfactory)
Experi-mental class	123	12	41	63	7

Control class	124	13	39	64	8

We obtain the dynamics of assimilation of these numerical values (see Fig. 1).

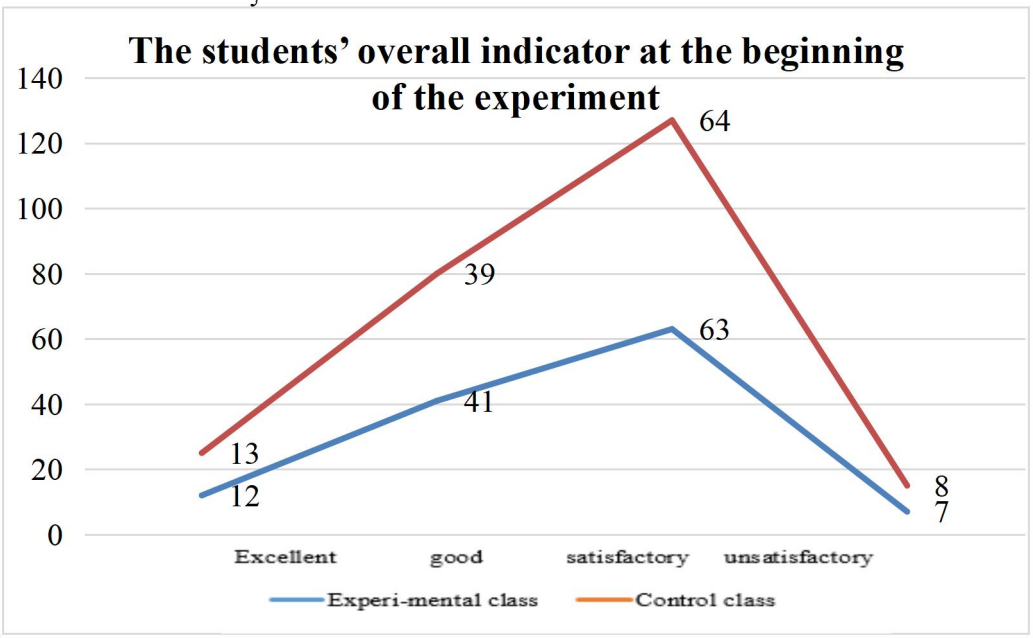

Figure 3. The pupils' performance at the beginning of the experiment

The results of the students involved in this experiment were analyzed, and in order to verify their reliability, a mathematical-statistical analysis was carried out based on the Student-Fisher criterion. Mean values appropriate for the samples when using this criterion $\overline{X} = \frac{1}{n}\sum_{i=1}^{4} n_i X_i$, distribution coefficients $D_n = \sum_{i=1}^{4} \frac{n_i (x_i - \overline{X})^2}{n-1}$ calculated using the formula. According to the calculation results, it was found that the results of the students divided into the experimental and control groups were practically the same.

At the next stage of the experiment, the model proposed within the framework of the study was used in the formation of geographical competencies of students involved in the experimental class. The control class was not given this opportunity.

Table 2

Grades of students in the experimental and control classes at the end of the experiment

Classes	**Number of pupils**	**Grades of pupils in the experimental and control classes**			
		5 (Excellent)	4 (good)	3 (satisfactory)	5 (Excellent)
Experi-mental class	123	17	70	33	3
Control class	124	12	40	65	7

The dynamics of the assimilation of the numerical values given in Table 2 is presented below Figure 2.

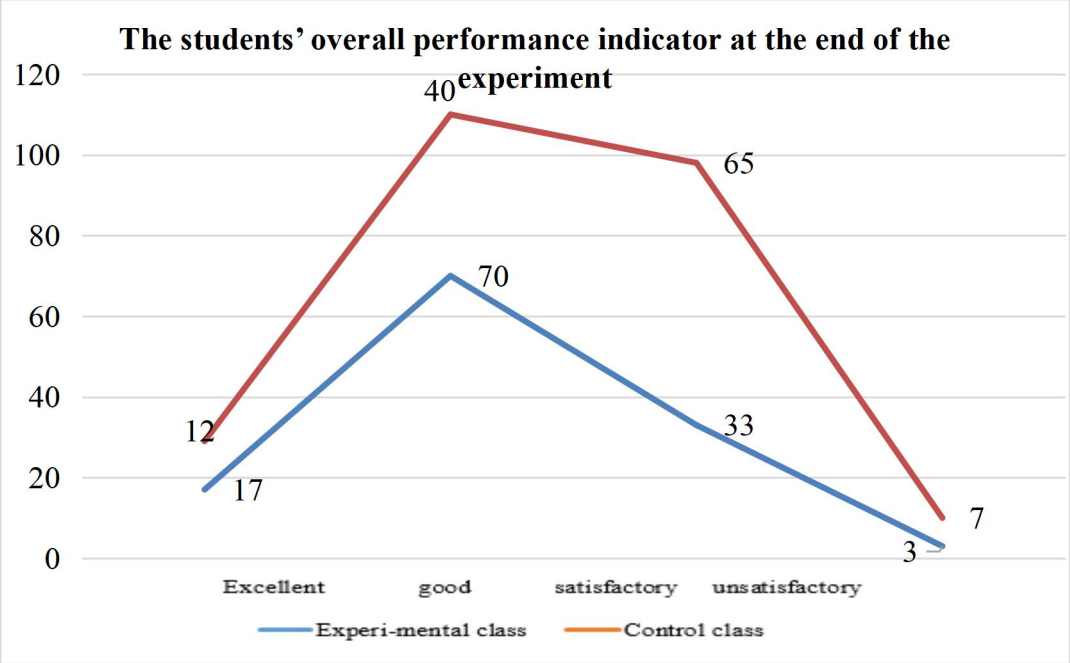

Figure 4. Student performance at the end of the experiment

The results of the students involved in this experiment were analyzed, and the reliability was analyzed mathematically and statistically based on the formulas given above. According to the calculation results, it turned out that the average mastery index of the experimental class was higher than that of the control class, that is, it increased by 9%. In conclusion, the use of the model proposed within the framework of the study for the use of digital educational technologies in the formation of geographical competencies of students of a general secondary school is considered appropriate. In this case, students will be able to form an idea about nature, develop logical, creative thinking about science, and form geographical competencies through independent learning.

References

1. Isroilova L. S. Improving the methodology for forming the competencies of secondary school students (on the example of the 8th grade Informatics and Information Technologies subject) // Dissertation prepared for the degree of Doctor of Philosophy (PhD) in Pedagogical Sciences. – Navoi, 2022. – 159 p.
2. Zhanzakov A.B. Improving the mechanisms for teaching geography in secondary schools using information technologies // Dissertation for the degree of Doctor of Philosophy (PhD) in Pedagogical Sciences. – Samarkand, 2021. – 143 p.
3. Shodiyev H.R. Improving the methodology of using information learning environments in teaching geography in the system of continuous education // Dissertation written for the degree of Doctor of Pedagogical Sciences (DSc). – Navoi, 2024. – 274 p.
4. Андриенко А. С. Компетентностный подход: исторические этапы становления и особенности развития современного периода // Мир науки. Педагогика и психология. 2023, Том 11, № 6. – С. 1-13.
5. Turdiev N.Sh., Asadov Yu.M., Akbarova S.N., Temirov D.Sh. Educational technologies aimed at forming students' competencies in the general secondary education system // Educational and methodological manual. –Tashkent, 2015. –160 p.
6. Грибан О.Н. Формирование информационной компетентности студентов исторического факультета педагогического вуза // Диссертация на соискание учёной степени кандидата педагогических наук. – Екатеринбург, 2012. – 254 с.