

## Methodological foundations for the development of practice-oriented tasks in geography based on the activity approach

**Elmira Kuandykova**<sup>1</sup>, Abai Kazakh National pedagogical university, Department of Geography, Almaty, Kazakhstan  
[elmira\\_kuandykov@mail.ru](mailto:elmira_kuandykov@mail.ru) <https://orcid.org/0000-0002-3050-3587>

**Nurbol Ussenov**<sup>2\*</sup> Abai Kazakh National Pedagogical University, Department of Geography and Ecology Almaty, Kazakhstan  
<https://orcid.org/0000-0002-3579-9698>

**Sholpan Karbayeva**<sup>3</sup>, Abai Kazakh National pedagogical university, Almaty, Kazakhstan <https://orcid.org/0000-0003-4135-5740>

**Kenzhekey Tleubergenova**<sup>4</sup>, Kazakh State Womens pedagogical university, Department of pedagogical sciences. Almaty, Kazakhstan, <https://orcid.org/0000-0003-2587-7776>

**Assyl Ziyavdinova**<sup>5</sup> Kazakh National women's teacher training university, Department of Tourism, Almaty Kazakhstan  
<https://orcid.org/0000-0001-5922-9932>

**Nursipa Karmenova**<sup>6</sup> Kazakh National women's teacher training university, Almaty, Kazakhstan <https://orcid.org/0000-0002-7903-6115>

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### Abstract

In this study, it is aimed to investigate and design the methodological foundations for the development of practical tasks in geography based on the effectiveness approach. The research was carried out in the spring semester of 2021–2022. The study with the participation of 360 secondary school students was conducted in a quantitative research model. In the study, 4 weeks of geography and activity training were given to the group of participants. In order to collect data, the 'effectiveness approach' data collection tool developed by the researchers was used in the study. The data collection tool used in the research was delivered to the students and collected by the online method. The analysis of the data was carried out using the SPSS programme; frequency analysis was carried out using *t*-test and the results obtained were added to the study accompanied by tables. As a result of the research, it was concluded that the group of participants had methodological foundations for the development of practical tasks in geography based on the effectiveness approach.

\* ADDRESS OF CORRESPONDENCE: **Nurbol Ussenov**, Abai Kazakh National Pedagogical University, Department of Geography and Ecology Almaty, Kazakhstan  
Email address: [nurik\\_88\\_kaznpu@mail.ru](mailto:nurik_88_kaznpu@mail.ru)

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## 1. Introduction

Education is known as the process of indirectly creating desired behavioural changes in students' behaviour through their own lives (Salama, Chiparausha, & Bsatar, 2022). When the educational process is expressed in terms of a person, it is called learning. Learning consists of the following elements: learner, learning material, learning strategy, teacher and learning environment. These elements, which we can also call factors affecting learning, are the student, curriculum programme, learning methods, tools, teachers and physical spaces (Aslanoglu & Ayyildiz, 2021). The purpose of education is to help students realise their essence and be useful to society. In order for learning to take place in accordance with its purpose or to achieve the purpose of education, attention should be paid to the elements of education (Sahin, Adıgüzel, & Nibat, 2021). In particular, studies on educational strategy and learning methods have an important place in improving the efficiency of learning. The world we live in consists of very rapid and radical changes in almost every field (Coskun & Edward, 2021). In this regard, it is extremely important to re-understand education and constantly improve educational programmes in understanding and making sense of today's world. The multiplicity and rapid change of knowledge have also necessitated fundamental changes in the old education system for 'acquiring knowledge' (Essien & Adelekan, 2021). Nowadays, educational strategies for teaching students how to access, evaluate and use information have become more important than gaining knowledge (Urh, Jereb, Šprajc, Jerebic, & Rakovec, 2022). Nowadays, it is also important to provide features, such as creativity, group work, cooperation, mission awareness, respect for different opinions, criticism, using time and creating products, to students. This situation necessitates learning models that enable students to be more active and teachers to take on more of a regulatory and consultant role (Galiakberova, Galyamova, Zakharova, Chervov, & Matveev, 2022).

Changes in educational programmes were also observed in the geography course. The programme is prepared based on the constructivist approach in teaching geography critical thinking, decision-making, observation skills, geographic inquiry, change and continuity perception, time perception, use of evidence etc. (Bakhmat et al., 2022). The aim of geography teaching is to enable students to gain geographical awareness about our country and the whole world starting from their immediate environment and to have equipment that they can be used more effectively in the future (Gerasymova et al., 2022). The geography course is a very suitable course in terms of using active learning methods as learning environments in which skills such as research, inquiry and critical thinking are used and selected. The teacher should choose appropriate teaching methods and techniques when planning the lesson (Zaporozhchenko et al., 2022). Transferring knowledge should give students a place in the learning process for activities based on active learning, rather than memorising the information contained in the book. One of the most appropriate methods for this approach, in which students are expected to structure the information themselves, is collaborative learning (Muñoz, Galvez, Enjolras, Camargo, & Alfaro, 2022). In a learning environment, students interact with each other in three different ways. In competitive learning environments, students interact by competing with each other to be the best in the classroom, while in individual learning environments, students are not interested in the successes or failures of others (Abdrakhman, Issabekova, & Kudabayeva, 2022).

In this research, it was aimed to provide methodological foundations for the development of practical tasks in geography based on the effectiveness approach to secondary school students with the help of technology and to be continued accordingly.

### 1.1. Related Studies

In the studies conducted by Treber, Moser, Helming, Haefner, and Lanza (2019), the competitiveness of production networks can be maintained for a long time by optimising individual production sites, while the overall network is increasingly becoming the focus of attention. In particular, the decommissioning of surplus production technologies offers the potential to take advantage of the economies of scale, combine technology-specific competencies and achieve an increase in efficiency. The purely mathematical optimisation models disseminated in the research were aimed at considering all the subtasks of planning and, as a result, they proposed a methodology for this problem situation.

Solem et al. (2018) in the year of assessment in geography provides a rationale for the work they have carried out in an international evaluation and temporary and are intended to report the findings of basic research that make up the framework. As a result, the activity approach and the development of educational evaluation for evidence-centred design benefit from the value demonstrated.

In Faraone et al.'s (2021) study, site-specific spatial variability is taken into account with the deep foundation design, while maintaining consistency with the current practice in reliability-based design methodology that supports the intended framework. As a result, they suggested that the spatial variability of the properties for the environment as methodological additional method of detecting a fault is not related to an uncertainty about it. It was seen that the values are reached.

Considering the studies in the related research section, it can be seen that the common denominator of the studies is to contribute to education and the field, and it is among the goals that this study serves the same purpose.

### 1.2. Purpose of the study

The general purpose of this study is to create methodological foundations for the development of practical tasks in geography based on the effectiveness approach of secondary school students with the formation of technology. In order to reach the problem situation in the research, answers to the following questions were sought:

1. What is the distance education status of the group of participants participating in the study?
2. Is there a significant difference between the group of participants participating in the study according to gender variables on the geography course?
3. How are the effectiveness approach examination situations of the group of participants participating in the study regarding the geography course?
4. What is the status of the group of participants participating in the study according to their learning status on the geography course of distance education and activity approach?

## 2. Method

In this section, the study group, the type and source of the data, the data collection tools and the statistics used in the research will be focused on.

### 2.1. Research model

In this section, it is seen that the information about which model the problem/situation is used is given to the students participating in the research. It is seen that a quantitative research model is used in this research, and this model is a research method that aims to examine a phenomenon and event in that time period, when old lives are transferred to new ones, as they are, and digitise these values (Elmira et al., 2022). In this study, the formation of methodological foundations for the development of practical tasks in geography based on the effectiveness approach of secondary school students through the quantitative research method was described according to gender, educational status and educational duration variables.

### 2.2. Working group/participants

In this section, we see that 360 students participated as volunteers studying at secondary schools in central Kazakhstan during the spring semester of 2020–2021. The data collection tool used in the study was applied to the 360 students online and accepted.

#### 2.2.1. Gender

The data of the group of participants participating in the study according to the gender variable were transferred and added to Table 1. Care was taken to ensure equal distribution between the group. The group of participants were randomly selected.

Table 1. Gender variable distribution of the participants participating in the study

Gender	Male		Female	
	<i>F</i>	%	<i>F</i>	%
Variable	178	49.44	178	49.44

When Table 1 is examined, it is seen that the gender values of the students participating in the study are given in groups. Within this scope, 49.44% (178 people) were male participants and 50.66% (182 people) were female participants. In the gender section, the findings reflect the actual gender distribution.

#### 2.2.2. Online training information

In this section, it has been questioned what kind of knowledge the students participating in the research have previously in the dimensions of online education, i.e., distance education, and the data are added to Table 2 by asking the students participating in the research.

Table 2 University students' online education use cases

I Have Information	I Have No Information	I have some knowledge
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Online training cases	F	%	F	%	F	%
Variable	34	9.44	201	55.83	125	34.73

As can be seen from Table 2, the status of the working group before the online activity has been investigated and it is seen that the information has been added. In light of this information, the students were told about online education and that the information will be transferred. In this context, 9.44% of the study group (34 people) chose 'I have knowledge', 55.83% (201) chose 'I have no knowledge' option and, finally, 34.73% (125 people) chose 'I have knowledge'. The findings in this section reflect the actual distribution.

### 2.2.3. Class status

In this section, the class status of the secondary school students participating in the study was examined and detailed information is given in Table 3.

Table 3 Distribution of the students participating in the study according to their class

Department	6th class		7th class		8th class	
	F	%	F	%	F	%
Variable	117	32.50	119	33.05	124	34.45

As shown in Table 3, eight-grade students (124 people) had the highest value (34.45%) among the distributions according to class values. 33.05% of the students (119 people) were in the seventh grade. In the senior year, the population was spread out, with 32.50% of the population (117 people) studying in the sixth grade. It is seen that it is in the class zone. In the class situations section, the findings reflect the actual distribution.

### 2.3. Data collection tools

The data collection instruments used in the research was by the researchers who created an online education in geography for application in the 'activity approach' assessment tool. The people who participated in the research provided the necessary information in the personal information form developed by the researchers. The validity and scope of the developed measurement tool was examined by four experts with the title of professor working in the field of geography, application effectiveness and online education. Unnecessary items were removed from the measurement tool and rearrangements were made. Out of a total of 24 items included in the measurement tool, only 20 items were used and 4 items were removed from the measurement tool, thanks to experts' opinions. The students who participated in the research were asked to provide information on two factorial dimensions, namely 'activity approach' and 'geography and methodological parts of online education'.

The opinions of the participating students were then consulted. The Cronbach alpha reliability coefficient of the measurement tool as a whole was calculated as 0.95. The measurement tool was rated as 'I strongly disagree' (1), 'I disagree' (2), 'I am undecided' (3), 'I agree' (4) and 'I definitely agree' (5). The measurement tool was also collected from university students in the form of an online environment.

1. First form: Information such as gender, class etc. were obtained in this form from the participants.
2. Second form: Practical geography knowledge of the research participants was obtained through online education. In order to get information about the views of the participants, a 5-point Likert-type data collection tool was designed. 20 items out of the 24 items in the measurement tool were used and 4 items were removed by people experienced in the data collection tool. The opinions of the participants in the study were obtained on two factorial dimensions: 'effectiveness approach' and 'geography and methodological parts of online education'. The Cronbach alpha reliability coefficient of the measurement tool as a whole was calculated as 0.82. The measurement instrument was in the range of 'I strongly disagree' (1), 'I disagree' (2), 'I am undecided' (3), 'I agree' (4) and 'I definitely agree' (5). The measurement tool was also collected by the participants in the study via MS Teams.

#### 2.4. Application

An online educational environment was prepared for the 360 volunteer secondary school students who are continuing their education in Kazakhstan and has been designed by showing them to experts in the field of educational environment. After the training part of the study, it was planned to show visuals for the geography and activity approach course for secondary school students. A 4-week online training was provided to students surveyed with methodological approaches, information on geography lessons, activities, approaches etc. Information was provided in the form of online education and included research about this topic and participants in project-based activity. Considering the absence of information about online education primarily, education is given to all the participants of the study. After 4 weeks of training, the data collection tool and the information form of the students participating in the study were applied and the data are given in the tables in the findings section. Most universities preferred MS Teams for education through secondary education students complete each section with the Section 5 application programme designated to be limited to a maximum of 72 weeks is set to be distributed to the idea of recording, each 30 minutes of total training online training in the form of question and answer in about 40 minutes in 10-minute time frame that has been processed in this environment by using smart devices to come online education and of research participants were expected to attend. The measurement tool applied to the student groups participating in the study was collected through an online questionnaire and transferred to the SPSS programme by coding them in the environment of calculation programmes.

#### 2.5. Analysis of the data

The data obtained from the students participating in the study were analysed in the Statistics programme using frequency ( $f$ ), percentage (%), mean ( $M$ ), standard deviation ( $SS$ ),  $t$ -test and one-way analysis of variance (ANOVA). The data obtained from the programme are accompanied by tables and comments in the findings section.

### 3. Findings

In this section, the findings obtained as a result of the analysis of the data obtained in the study are added in the form of tables and various interpretations are included in accordance with the findings.

#### 3.1. Online education of the students participating in the study

After the training, the online education situations were investigated again and the findings are shown in Table 4.

Table 4. Online education status of the students participating in the study

Online education	N	M	SS
Becoming predisposed to online	360	4.15	0.428
Using an online educational	360	4.35	0.399

When Table 4 is examined, the findings are also examined and the conditions for students in online education are seen to occur. According to this, being predisposed to online education had a score of  $M = 4.15$ . It is also seen that using an online education environment had a score of  $M = 4.35$ . According to these values, it is also seen that the students included in the study after the training are predisposed to online education and distance education.

### 3.2 Distribution of the group of participants participating in the study according to gender variables on the geography course

In this section,  $t$ -test was applied to find out whether the difference between the students participating in the study was positive for the gender variable through the geography course based on the effectiveness approach.

Table 5 Distribution of the group of participants participating in the study according to gender on the geography course

Geography course	Gender	N	M	SS	SD	t	p
Understanding and predisposition to geography course	Male	178	3.80	0.403	360	-2.284	0.022*
	Female	182	4.05	0.412			
Failure to attend geography class	Male	178	2.10	0.629	360	2.242	0.021*
	Female	182	2.05	0.632			

According to Table 5,  $t$ -test results are based on the scores of the students' surveyed geography activity for a lesson in terms of gender. 'Geography predisposition and understanding' was reached and the conclusion is that the size of the resulting difference is significant [ $t(360) = -2.284, p < 0.05$ ]. When the arithmetic averages of geography course comprehension and predisposition are examined, it is seen that the average of the male participant group is  $M = 3.80$ , the average score of the female participant group is  $M = 4.05$ , in favour of the female participants. Accordingly, it can be said that the group of female participants understand and are predisposed to the geography lesson in comparison to the group of male participants.

Assessment tool students according to the gender variable calculated from the scores from 'to participate in a geography lesson' size last done that has emerged, resulting in the difference was significant  $t$ -test [ $t(360) = 2.242, p < 0.05$ ]. When the arithmetic averages of the size of those not participating in the geography course are examined, it is seen that the average of female students ( $M = 2.05$ ) is higher average score than the average of male students ( $M = 2.10$ ). According to this result,

it is seen that male students stay away from the geography course more than female students. This value supports the success of female students on the predisposition to the geography course.

### 3.3 Effectiveness approach examination situations of the group of participants participating in the study regarding the geography course

In this section, the ANOVA test was applied to find out if there are differences among the group of participants participating in the study regarding the effectiveness approach to the geography course and the effectiveness approach and methodological patterns of the study.

Table 6. Effectiveness approach of the groups of participants participating in the research on the geography course review situations

Dimension	The variance	Squares sum	SD	Squares average	F	p
Effectiveness approach	Source	57.980	10	.212	1.201	0.225
	Intergroup	58,880	350	0.152		
	Groups	58.430	360			
Methodological patterns	Average total	103.101	10	0.124	0.308	0.6500
	Intergroup	105.122	350	0.315		
	Groups	104.112	360			

As seen in Table 6, the approach of the students is surveyed for geography lesson activity patterns over and methodological approach to review the status for the activity scores for ANOVA. According to the results, the activity approach to care for the size of a statistically significant difference was found [ $F(10-350) = 1.201, p > 0.05$ ]. Again, it was concluded that there was no significant difference in methodological terms between the analysis findings [ $F(10-350) = 0.315, p > 0.05$ ]. It is also seen that there is a behaviour among students about this topic, as well as the fact that there are no differences in the methodological patterns of geography and the effectiveness approach situations, which means that they learn the subject well in live lessons.

### 3.4 Status of the group of participants participating in the study according to the learning status of the distance education and activity approach on the geography course

In this section, the group of participants participating in the study was investigated according to their learning status on the geography course of distance education and the effectiveness approach, and the findings are shown in Table 7.

Table 7. Status of the distance education and activity approach according to the learning status on the geography course

Distance education	N	M	SS
Predisposition to distance education	360	4.41	0.440



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Inability to use a distance learning environment	360	2.15	0.575
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The final problem statement of the research activities of the geography for the assessment of the status of the participant groups that are used for distance education is shown in Table 7. Students gathered data from 'distance education predisposition' with the highest value of  $M = 4.41$ . At the same time, 'the inability of the distance education environment' had a score of  $M = 2.15$ . It is noted in this situation that distance education geography lessons, when examining the activities of Table 7, for the predisposition of the state of their status is low. It can be said that abstinence is very good.

#### 4. Discussion

Zhukova, Lyapina, Pankina, Yakunchev, and Zabrodina (2019), in the year of the work they have carried out in elementary and secondary school teachers in the teaching of chemistry subject area of competence, aimed at providing an overview of practical experience under practical assignments and to work as a result methodical materials for teachers and secondary school teacher a teacher's professional standards and general requirements and the adequacy of their job functions consistent with the evaluation criteria as, students learned the value achieved by adopting the results of the research approach and methodological foundations of the study in research when combined with the activity which is meaningful and useful. It is seen that common values are reached. From the two values in this study, it is known that one has a purpose and it seems to provide better service and training to the students to succeed in education, providing students with these two values in the literature.

Ermakov's (2019) study, which was carried out in the year of the study on constructivist and based on the systemic and convergent approaches, aimed to formulate recommendations for increasing the effectiveness of vocational education and training for sustainable development. As a result, the corporate level for students (training organisation for manufacturing enterprises) 'Agenda 21' was based on their participation in the implementation of sustainable development on behalf of vocational education to the conclusion that they have reached a practical approach to the applicability when the values of the research and this result are combined. It is concluded that students' predisposition status for the approaches is good. In addition to these results, it is seen that the results of the research are also low in the non-predisposition status.

In the studies conducted by Mazbayev, Alieva, and Demeuov (2020), geography education is oriented towards the model of Western teaching disciplines. The positive and negative results obtained to date are intended to be discussed in this article, and as a result, an interesting question arises: how do we teach students? And the question of which topic we are studying is fading into the background. The mass transfer of school subjects to a new educational model led to fragmentation. In this article, the authors, from the 7th grade through 11th grade in Kazakhstan, tried to characterise the geographical discipline in the working process of trying to analyse the state of geographical education. In fact, when combined with the results of the research the value of the geography course provides students success in the cases they observed that it was created.

As it is understood from the studies in the discussion section, it is seen that the activity levels and methodical approaches have achieved success in both geography and different courses for students. It is also known that the approach of the activity approach to the application of geography gives a meaningful message to students. In this context, it can be said that it gives meaningful value to

the direction of education. This part and leaves a mark on the research as it is also among the expectations that further research will be conducted in the future.

## 5. Conclusion

When the results section of the study is considered, it is seen that the group of participants is included in the data for the first time in the study. It was concluded that 360 people participated in this study, and this value in the study has the same value as a better understanding of the problem situation in the study. Another result of the research is that the status of the working group students before the online activity was investigated, and as a result, it is seen that the students included in the study do not have information about distance education and online education. This value makes a difference in the direction of the research, and first of all, the online educational situation should be good for the delivery of the geography course in this context; online activity training has been provided to the students. Another value of the study is that the situations related to the online education status of the students participating in the study were examined and the results were accompanied by the results of which it was concluded that the online education predisposition values were high. There is an increase in online education situations due to the fact that the previous value is combined with this value. Another value of research students based on the activity approach in terms of the gender of the scores for variable is 'geography predisposition and understanding', In this context, it can be concluded that the difference is significant, resulting in the size of female students and male students, in favour of female students as high values are reached. Another value of the study is that according to the gender variable, the difference in the dimension of 'not attending a geography lesson' was found to be significant within the scores calculated from the measurement tool of the students participating in the study.

Susceptibility values are too high, considering that although a geography lesson for another result of this research activity of students surveyed over the approach and methodological approach to the review status for the activity patterns of scores for ANOVA. According to the results, a statistically significant difference was not found for the size of the activity concluded. In addition, according to the results of the analysis, it was concluded that there was no significant difference in terms of methodological patterns. In this context, methodological patterns for geography practice activities and the absence of differences in the effectiveness approach situations mean that the subject covered in the live lessons is learned well, and it is also seen that there is a behaviour among students about this topic. As a final result of the research, data were collected from the group of participants on the evaluation of distance education situations used in the activities of the geography course, which is a problem situation, and as a result, the results show that the students have the highest value in the dimension of 'distance education predisposition'.

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