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The effectiveness of interactive teaching methods in the professional training of pre-service geography teachers

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Abstract

The pre-service training of competent geography teachers requires searching for effective teaching methods to increase their professional competence. The study aims to determine the effectiveness of interactive teaching methods for teaching geography during the pre-service teacher training. The ideas of transactional analysis and interactionism underlay the interactive teacher training of 260 students from Kazakh universities. The survey revealed interactive teaching methods positively influence the readiness of pre-service teachers to enhance their professional competence. This research confirms the importance of using interactive teaching methods to promote students' engagement and cooperation during the pre-service teacher training.

Keywords: pre-service teacher training; professional competence; pre-service geography teacher; interactive teaching methods; methods for teaching geography;

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1. Introduction

As countries enter the global educational space, the need arises for a comprehensive review of educational quality and the level of educational services according to international standards. Due to globalization higher educational institutions have to target new objectives, which involve "training of professional workforce able to operate effectively in changed market conditions" (Zhanguzhinova et al., 2018, p. 155). In these conditions, it is important to consider "the needs of the individual and society, target priorities, the predicted process and outcome" (Avralev & Efimova, 2015, p. 293) in order to be competitive worldwide. The quality teaching takes these ideas into account, which requires attention to educational outcomes, the effect of the learning approach on the mindset of the learner, and adapting teaching methods to interpersonal relationships (Black & Mischel, 2020; Caetano & Felgueiras, 2019). Today, training highly qualified teachers who are able to compete on the international labor market is important (Rönnström, 2015). They should be ready to work in a world where scientific knowledge is rapidly expanding, and implement available education technologies (Rosli & Suib, 2020).

Social science subjects include geography, which is of great importance for understanding the geographical environment of humanity and society (Lambert, 2011; Mizambaeva & Baimyrzaev, 2019). Teaching geography results in students acquiring "permanent knowledge and applying it to new teaching and life situations, while minimising the process of forgetting" (Lukić et al., 2016, p. 255; Kelkay & Mola, 2020). These outcomes highlight a geography teacher's professional activity. A geography teacher should be regularly updated on scientific knowledge about places and relationships arising between people and the environment, as well as be ready to teach geography with the aid of relevant education technologies (Karaca, 2020). Teaching geographical facts about countries, water resources, landscapes, animals and plants adds to teaching facts from other subjects, such as history, archeology, and biology. They all explain peculiarities of training pre-service geography teachers, whose professional activity requires the knowledge from social and natural sciences in order to explain "interconnections between social systems, places and events" (Pirbhai-Illich, F., & Martin, F., 2020, p. 23).

Despite the seemingly devastating effect of globalization on national values, geographical education in Kazakhstan not only retains and promotes the national identity but also pays attention to national values of other peoples (Temirbekov & Yesnazarova, 2013). It is essential that geography teachers provide quality education since the "lack of the appropriate content of education and training technologies reflecting the requirements of [the] developing society" (UNDP in Kazakhstan, 2004, p. 67) prevents from imparting "theoretical and practical knowledge, directing the education process toward not only learning facts but developing thinking abilities too" (UNDP in Kazakhstan, 2004, p. 86) to students.

To encourage students to achieve the learning outcomes, geography teachers must be able to independently and creatively solve tasks assigned to them, and be able to independently search for new geographical knowledge and apply it in non-standard situations (Lamiadiati et al., 2017; Martins, 2015). This teacher contributes to the development of students' cognitive and creative abilities by helping them form a scientific understanding of the world, develop geographical thinking, the ability to receive information from different sources, and to identify and analyze links between natural and social processes (Mizambaeva & Baimyrzaev, 2019; Yehya, 2020). These outcomes expand students'

awareness of the world around them, which they acquire through direct and indirect experiences earlier (Tanner, 2021).

The professional activity facilitates the enhancement of a geography teacher's professional competence. The competence includes the following generalized characteristics: substantive characteristics (knowledge, abilities, skills required for the implementation of professional activity), structural characteristics (the personality of a geography teacher), and mindset characteristics (the readiness of a geography teacher to plan and implement the professional activity) (Ningrum, 2019; Osuch, 2013; Tan, 2017). Together, these characteristics are necessary for the high-quality professional activity of a geography teacher and allow them to structure scientific and practical knowledge to effectively solve practical problems.

It is important to develop the professional competence of a geography teacher when they are students in the teacher training institution, or during the pre-service teacher training, since it is the time when the substantive, structural, and mindset characteristics of the competence are developed and boosted. The changing demands for geography teachers' professional activity and the "deficient preservice preparation in geography" (Boehm et al., 2012, p. 41) require a new approach to planning and implementing the training of pre-service geography teachers (Béneker et al., 2015; Schuler et al., 2018). Its methodological foundations must be strengthened (Bijsterbosch et al., 2019) in order to train competent geography teachers.

The professional competence should be enhanced during the training of pre-service geography teachers (Kramáreková et al., 2016) so we have focused on its main components and developed their content relevant to teaching geography. The training includes gnoseological, axiological, praxiological, and personal structural components (Fig. 1). The gnoseological component describes a geography teacher's willingness to use their knowledge of geography, ecology, education, and methods for teaching geography in the professional activity. A geography teacher's ability to promote values relative to their professional activity characterizes the axiological component. Their professional skills are integrated in the praxiological component, whereas their personal qualities required to successfully implement the professional activity – in the personal one (Krivdina et al., 2016; Mizambaeva & Baimyrzaev, 2019). Developing these components leads directly to an increase in the professional competence of a pre-service geography teacher.

The components of the training of pre-service geography teachers align with the aspects of the geocapabilities model, which promotes values of geography education and highlights powerful knowledge in geography (Bladh, 2020). They both target development of geography curriculum, which is associated with the choice of the relevant geographical content and education technologies to impart powerful knowledge in geography.

The need to enhance the professional competence of a pre-service geography teacher has prompted the search for effective teaching methods (Joao Mimoso, Bravo & Gomes, 2018; Seferoglu & Celen, 2020). Interactive teaching is among them, which refers to "a means of elevating students' higher order skills, and empowering them as independent thinkers" (Wassermann, 2017, p. 7). It is important to realize that thinking processes are prioritized over finding definite solutions to problems, so promoting ready-to-answer solutions, which do not boost students' cognition, has nothing to do with interactive teaching. Another argument against interactive teaching results from instructors not using relevant rules and algorithms required for interactive learning activities. Interactive teaching

methods stress interactive learning, which relies upon pre-service geography teachers' engagement and cooperation during the training program (Cief & Niznansky, 2016; Dobrynina, 2014).

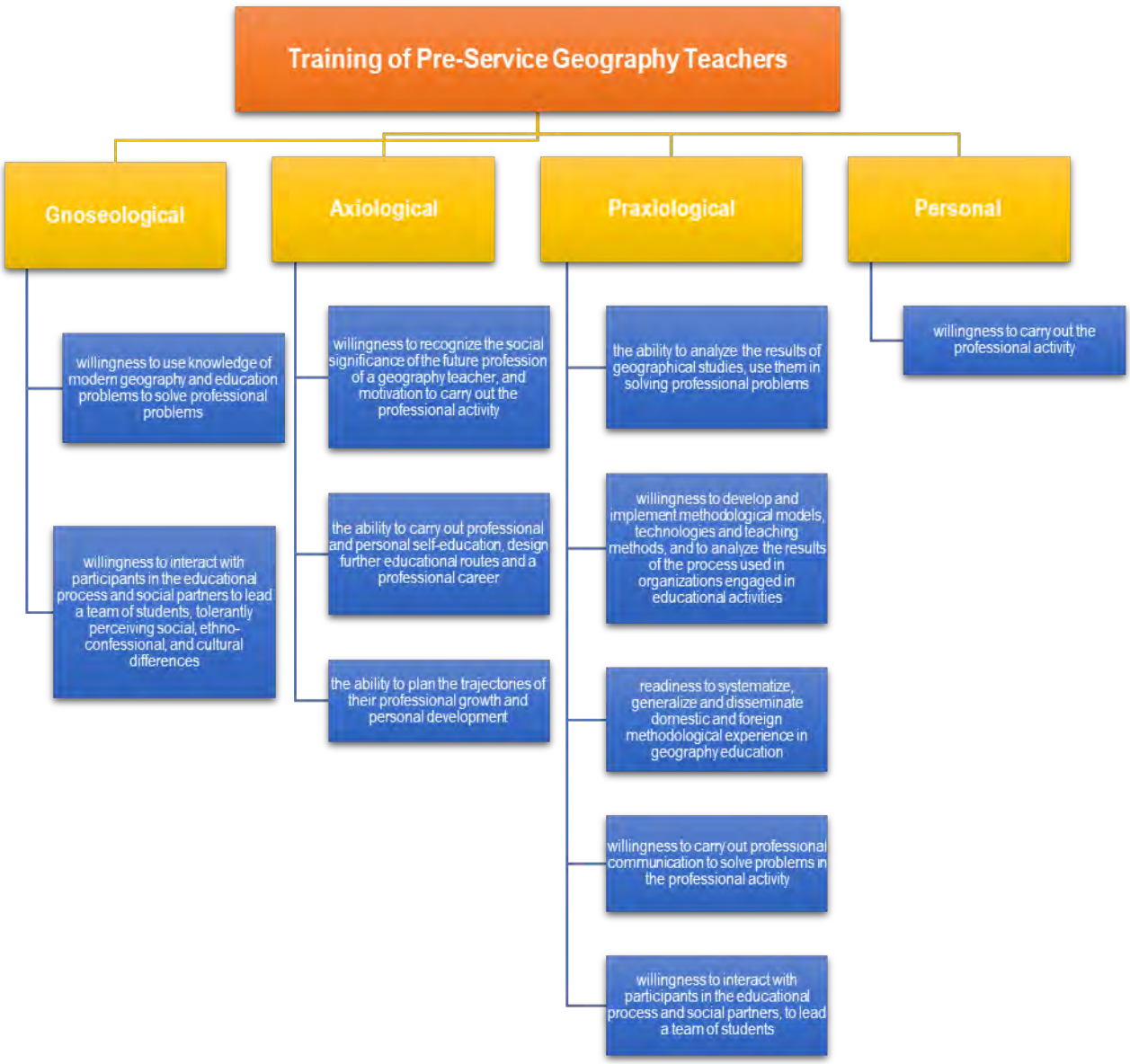

Fig. 1. Components of the Training of Pre-Service Geography Teachers

The methods intensify their interpersonal exchanges, develop their analytical and creative thinking, mobilize their cognitive powers, awake interest in new knowledge, boost active participation, and provide immediate feedback; as a result, pre-service geography teachers' involvement and satisfaction

increase (Afrasiabifar & Asadolah, 2019; Kutbiddinova et al., 2016; Nitulescu & Rotaru, 2012). These achievements substantiate the need to provide interactive teacher training, or training with the use of interactive teaching methods.

The interactive training of pre-service geography teachers is aimed at their individual development and interpersonal communication by connecting their own experience to the learning process. They develop cognitive independence, and their interest in the study of geographical disciplines and the implementation of creative teaching approaches grows (Chikina, 2016; Qassem, 2020). Teaching creatively involves good subject knowledge that allows for new learning opportunities their students can find themselves in (Scoffham, 2013. p. 5; Trskova, 2021). Thus, there is a high level of interaction, emotional and spiritual integration in the training of pre-service geography teachers. These outcomes correspond to the development of the gnoseological, axiological, praxiological, and personal components of training pre-service geography teachers.

In the process of interactive teacher training, it is necessary to respect the rights and freedoms of the pre-service geography teacher, create conditions for self-expression, and provide them with pedagogical support. Various auxiliary tools are widely used at that. These include videos, films, computer presentations (Richter & Van Der Westhuizen, 2005), smart boards (Veronek, 2010), and educational online resources (Boehm et al., 2012). The newest tools are augmented reality devices that can help students visualize geographic data (Stojšić et al., 2019). Examples include the ArcGIS Online application for working with interactive maps (Kholoshyn et al., 2019) or in virtual reality using the Interactive Spherical Video-Based Virtual Reality program (Geng et al., 2019).

The peculiarities of pre-service teacher training, which involves using interactive teaching methods to develop the professional competence of pre-service geography teachers, are observed in figure 2. We have managed to connect the main aspects of training pre-service geography teachers. Here the increased professional competence as a result of the training characterizes the professional activity of a competent geography teacher. In turn, such a professional activity requires specific training known as the training of pre-service geography teachers. They all contribute to increasing the quality of geography education.

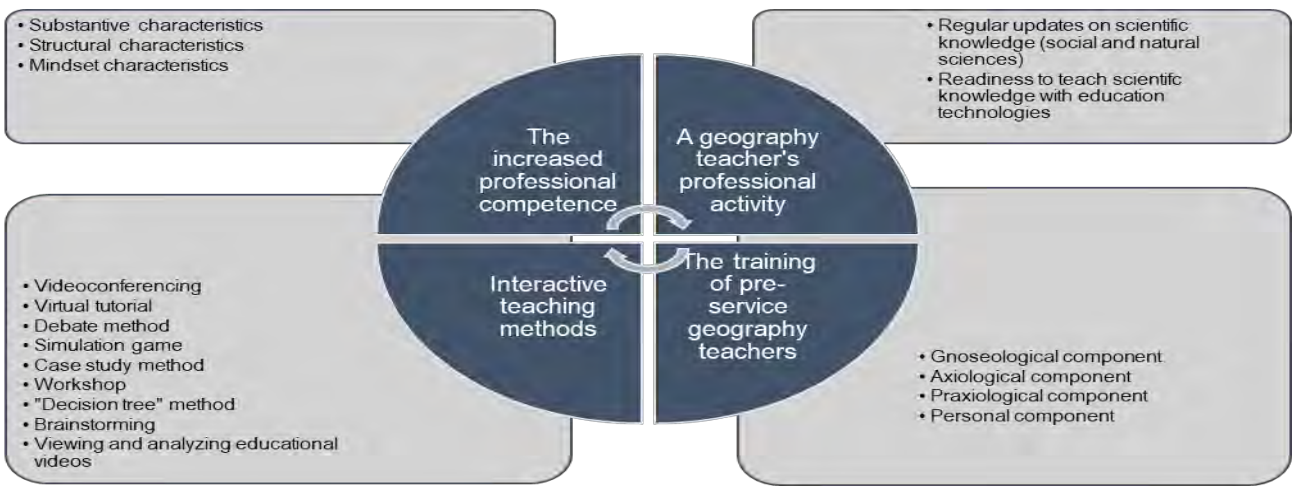

Fig. 2. Peculiarities of Training Pre-Service Geography Teachers

It is important to observe whether pre-service geography teachers appreciate the use of interactive teacher training. Their reflections on the awareness and knowledge acquired during the training reveal their attitude towards the professional activity and consequently demonstrate their views on the professional competence(Ozdemir & Ummanel, 2016) . In particular, the questionnaires given to pre-service teachers before and after an introductory environmental education course demonstrated an increase in their environmental awareness and knowledge especially due to the online debate forum and field trips. The positive effects of employing interactive teaching methods facilitated the improvement of environmental education (Tal, 2010). Next, performing microteaching activities was associated with "higher levels of confidence in geographical subject matter knowledge and teaching geographical skills" (Harte & Reitano, 2015, p. 223) reported in surveys. Considerations about the methods (discussion, using current events, cooperative learning, individual projects, brainstorming) were included in another questionnaire, as well as reasons for teaching geography and challenges facing it, and important topics in the geography curriculum (Al-Nofli, 2013). Such reflections in surveys can contribute to the better understanding of pre-service geography teachers' professional competence.

The evidence shows that the successful implementation of interactive teaching methods helps to increase the professional competence of pre-service geography teachers. It is important to see how the image of a geography teacher, their professional activity, and generalized characteristics of professional competence are enriched during the interactive teacher training. In this regard, collecting feedback from pre-service geography teachers contributes to the exploration of this issue, which is not clearly presented in pedagogical science. That allows us to formulate the following hypothesis for this study: if we implement interactive teaching methods to teach geography to pre-service geography teachers, then their professional competence will increase.

The purpose of the study is to determine the effectiveness of interactive teaching methods for teaching geography during the pre-service teacher training.

2. Research Methodology

Implementing the interactive training of pre-service geography teachers is based on the ideas of E. L. Berne, the father of transactional analysis. He proposed dividing the entire process of interaction between people into elementary pieces – transactions. A transaction is a unit of verbal or non-verbal communication that describes individual interactions between people, taking into account three ego-components: parent, adult, and child. The interactions are associated with individuals' perceptions of the world around them, ways of thinking and acting, which depend on their ego-component during communication. According to E. L. Berne's transactional analysis, communication between two people is always an interaction between certain states of their "I". When one participant in a dialog sends a stimulus and the other responds to this stimulus with at least one I-state, that communication can be considered successful (Taktek, 2016).

The popularity of the term "interactive" in psychological and pedagogical literature is associated with the development of interactionism. Interactionism is a direction in modern international psychology and sociology, the basis of which is the theory of social interaction proposed by G. H. Mead. The ideas of interactionism suggest that a person's personality is formed in communication situations with other people (Sudtho, 2015). The ideas of transactional analysis and interactionism are

reflected in the investigation into the effectiveness of interactive teaching methods used to teach geography during the pre-service teacher training, which are promoted in Kazakhstani education.

2.1 Interactive teaching methods

These teaching tools strengthened the implementation of interactive teaching methods for pre-service geography teachers (Safonova, 2011; Stupnikova, 2013; Chikina, 2016):

2.1.1 *Videoconferencing* involves two or more remote participants

discussing problematic issues with geography. Audio and video communication can be synchronous to allow participants to learn "more about the geography, culture, and history of the place of videoconferencing counterparts" (Krutka & Carano, 2016, p. 112). The same concerns sharing solutions to the effective use of methods for teaching geography or exchanging ideas about professional skills of a geography teacher in the digital world.

2.1.2 A *virtual tutorial* is used to consolidate and independently adjust

Knowledge and skills, develop group activity skills, and share experiences with other participants. The tutorial usually takes the form of group discussions and games to discuss basic methodological issues, which can arise while students are involved in cooperative learning or make individual projects on planning geography lessons.

2.1.3 The *debate method* is a clearly structured and specially organized

public exchange of thoughts between two parties on relevant topics regarding geography teaching methodologies. It is a public discussion between the debaters aimed at convincing third parties of their correctness, not each other. Each debater deploys both verbal and non-verbal means to this end in order to form a positive impression in students of their own position. For instance, the discussion of a geography textbook during a debate forum can be multi-faceted: its increased role in learning, its secondary role in learning, availability of different textbooks, one textbook for beginning and experienced geography teachers (Stupnikova, 2013).

2.1.4 A *simulation game* of a geography lesson, or microteaching

activities (Harte & Reitano, 2015), can be beneficial for pre-service geography teachers. Such lessons can be organized in the classroom or as field trips so that students should come across life situations arising between people and the environment. The faculty member does not comment during the game; discussion occurs at the end of the simulated lesson and can touch upon the personal qualities revealed and values promoted at the geography lesson.

2.1.5 With the help of the *case study method,* pre-service geography

Teachers can analyze and make decisions about a methodological situation (problem) that arose as a result of events, real situations, or those that may arise under certain circumstances at a given point in time. This method utilizes simulation of real situations, such as the analysis of the protest action "No to the magnesium plant!". The pre-service geography teachers are to describe the educational value of the protest action, its organizers' objectives, techniques to hold the protest

action, its contribution to the ecological education of students, and recommendations to effectively hold such actions (Stupnikova, 2013).

2.1.6 A *workshop* is aimed at developing professional competencies and

social expectations. The intensive group workshop assimilates and consolidates theoretical material, which forms professional skills. The workshop can serve as a way to motivate pre-service geography teachers to continue their professional activity. A two-day workshop devoted to an investigation into the role of forests in climate change can serve as an example. An increase in the pre-service geography teachers' awareness of the role of forests was due to the activities they were involved in: strengths and weaknesses of forests, knowledge about climate change, the impact of forests on climate change, policies on forest and climate change, climate refugees (Cebesoy, 2019).

2.1.7 The *"Decision Tree" method* is a practical way to assess the

Advantages and disadvantages of various options for solving a methodological problem. For example, there can be difficulties among students in preparing a computer presentation on any geographical topic. Pre-service geography teachers' opinions how to overcome the difficulties can result in effective recommendations to make presentations in the classroom.

2.1.8 *Brainstorming* is an easy way to generate ideas to solve a

methodological problem at the geography lesson in a short amount of time. During a brainstorming session, participants freely exchange ideas as they arise in such a way that everyone can develop other people's ideas without necessarily expressing appreciation or criticism. For instance, ideas on increasing the quality of a geography lesson can be generated by four groups of students acting as leaders, in-service geography teachers, parents, and students (Stupnikova, 2013).

2.1.9 *Viewing and analyzing educational videos* is a method aimed at

discussing certain difficult aspects of the discipline that require a faculty member's methodical review. The use of current geographical events for this discussion will be of great help. The videos help pre-service geography teachers clearly understand the frequent problematic issues of teaching geography.

2.2 ***Participants***

The study involved 520 students aged 17 to 25, who were majoring in Geography at three state universities in the Republic of Kazakhstan: Ilyas Zhansugurov Zhetysu State University (Taldykorgan), Shakarim State University of Semey (Semey), Sarsen Amanzholov East Kazakhstan State University (Ust-Kamenogorsk).

2.3 Materials and Procedure

This study took place in the 2018-2019 academic year and lasted 15 weeks. Before the beginning of the experiment, in order to obtain the results of the ascertaining experiment, all participants - students were questioned. Written consent was obtained from students to participate in the

experiment, to process and use their answers. Students were given forms on which multiple choice questions were printed with regard to assessing their readiness to teach geography at school:

1. Evaluate your readiness to perform the professional activity as a geography teacher on a scale of 1 to 10. According to this scale, “1” indicates a low level of readiness, while “10” is a high level. The average score was taken to assess the readiness of the subjects.

2. Do you see yourself in the future as a geography teacher? The answers included “no,” “probably no,” “probably yes,” and “yes.” After processing the results, a percentage ratio for the responses was prepared.

3. Is it interesting to study the “Methods for Teaching Geography” discipline? For this, the subjects expressed or did not express their interest in studying this discipline, which was presented as a percentage.

At this stage, the participants in the experiment had to give their answers, relying on previously studied theoretical materials on the competence of a geography teacher (basic concepts, components, constituent elements) and their own feelings about their future profession. Since moral, psychological readiness for their future work is important in the success of the work carried out and in the further development of the teacher's professional qualities.

During the academic year, the formative experiment allowed testing the effectiveness of interactive teaching methods in the professional training of pre-service geography teachers. According to the teacher training program, the participants take the training courses in methods for teaching geography each academic year; each course is worth three credits (30 lectures, 15 seminars).

To conduct a formative experiment, we developed a lesson plan within the discipline "Methods of teaching geography" using the previously indicated types of interactive methods, as well as a methodological manual with recommendations for using these interactive methods.

The approbation of this lesson plan using interactive methods was carried out for 260 participants in the experimental group who studied the discipline "Methods of teaching geography" according to the developed plan. The following methods were used in lectures and seminars: videoconference, debate method, training, brainstorming method, viewing and analysis of video lectures.

All the students needed was desktop or mobile devices, access to the Internet, paper, and pens. Each method was chosen in accordance with the topic studied in lectures and seminars in order to increase the students’ engagement and cooperation during the pre-service teacher training. The auxiliary tools (videos, films, computer presentations, smart boards, educational online resources, augmented reality devices) strengthened the use of the methods.

After studying the discipline, the participants in the control and experimental groups gave written feedback via the survey again. Their answers reflected the impact of the interactive teaching methods on their professional competence. In addition to the three questions that were used at the preliminary experiment stage, two more were added:

4. Is it interesting to use interactive teaching methods when studying the discipline “Methods for Teaching Geography”? The level (in percent) of interest among the participants in the experimental group towards the interactive teaching methods they used was determined. The level of interest was based on their answers “yes” and “probably yes”.

5. Have you acquired certain skills during the interactive training? Suggested answers: "yes", "probably yes", "no", "probably not", "I find it difficult to answer." On the form they listed the skills that students can acquire after the experiment of Fig.1.

All the Likert scale questions correspond to the generalized characteristics of professional competence and components of the interactive training of geography teachers (Table 1).

Table 1. Relevance of survey questions to the interactive teacher training

Survey questions	A geography teacher’s professional competence	Training pre-service geography teachers
Evaluate your readiness to perform the professional activity as a geography teacher on a scale of 1 to 10	Substantive characteristics, structural characteristics, mindset characteristics	Gnoseologicalcomponent, personal component
Do you see yourself in the future as a geography teacher?	Structural characteristics	Axiological component
Is it interesting to study the “Methods for Teaching Geography” discipline?	Substantive characteristics	Praxiological component
Is it interesting to use interactive teaching methods when studying the discipline “Methods for Teaching Geography”?	Structural characteristics	Gnoseological component, praxiological component
Have you acquired certain skills during the interactive training?	Substantive characteristics, structural characteristics, mindset characteristics	Axiological component, personal component

The data were processed in Office Reports program, which allows you to visualize the answers received during the questionnaire, translating them into graphical diagrams.

3. Research Results

From the surveys taken after both the preliminary and formative experiment stages, the data were obtained regarding the subjects’ assessment of their readiness for teaching geography. The answers to the question “Evaluate your readiness to perform the professional activity as a geography teacher on a scale of 1 to 10” show variance among the subjects. For the control group, there was a slight increase in the indicator of their attitude toward the readiness for the professional activity with an average of 0.5 points, or 5% (from 4.6 to 5.1 points). The participants in the experimental group noted that the indicator of their attitude toward their readiness for the professional activity increased by an average of 3.1 points, or 31% (from 5.8 to 8.9 points). In assessing the subjects’ readiness, we

averaged scores on a scale of 1 to 10 given by the control and experimental groups at each stage of the experiment (Fig. 3).

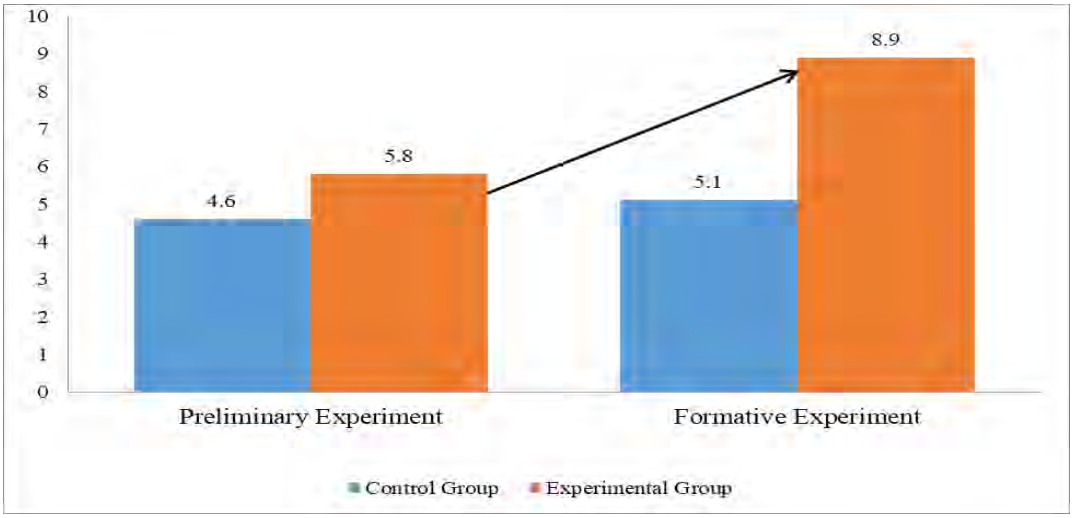

Fig. 3. Assessment of the Subjects' Readiness to Perform the Professional Activity as a Geography Teacher

Various data were also obtained after processing the answers to the question "Do you see yourself in the future as a geography teacher?" A slight change in the results was noted among the participants in the control group. In particular, the answers "yes" and "probably yes" were given by 112 (43%) subjects at the preliminary experiment stage, and 117 (45%) at the formative experiment stage; "no" and "probably no" had 148 (57%) and 143 (55%) respectively (Fig. 4).

The participants in the experimental group had different results. An increase of 24% was recorded (62 subjects) of "yes" and "probably yes" answers. If at the preliminary experiment stage 109 (42%) of the subjects answered "no" and "probably no," then at the formative experiment stage, that indicator decreased to 18% (47 subjects) (Fig. 4).

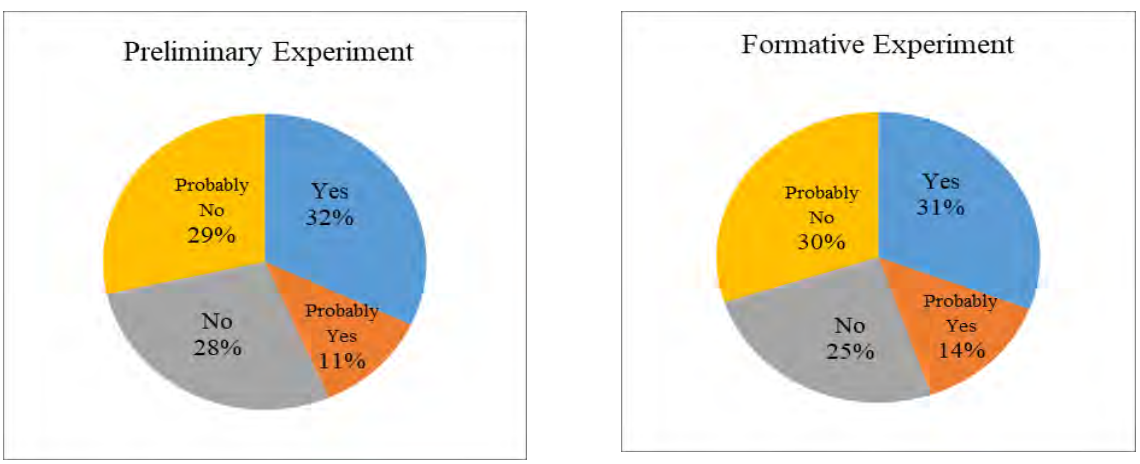

Fig. 4. Answers of the Participants in the Control Group to the Question

"Do you see yourself in the future as a geography teacher?"

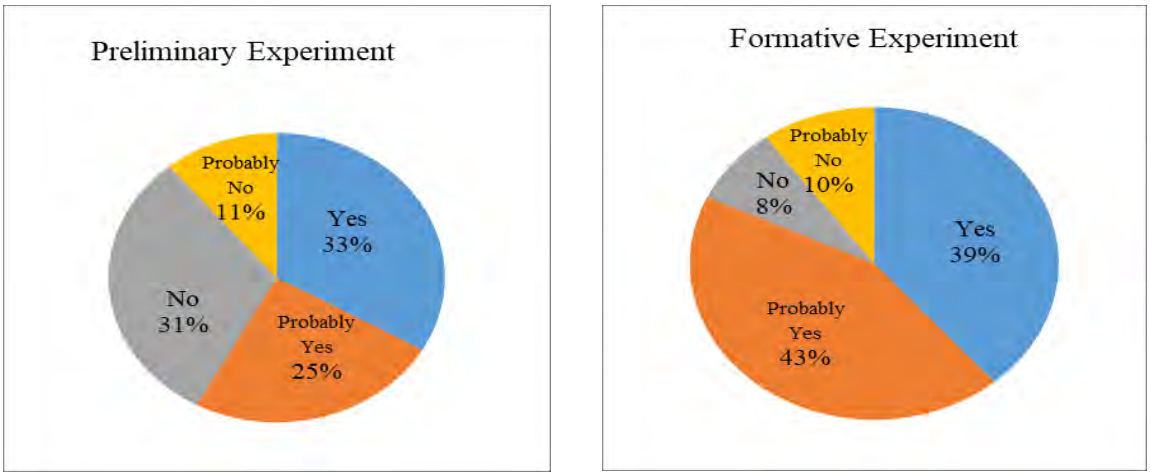

Fig. 5. Answers of the Participants in the Experimental Group to the Question

At the formative experiment stage, 203 participants (78%) in the experimental group noted their interest in studying the discipline "Methods for Teaching Geography". That is an increase of 30% compared to answers after the preliminary experiment (an increase of 78 students). However, in the control group this indicator remained virtually unchanged at 112 (43%) and 114 (44%) subjects at each stage of the experiment (Fig. 6).

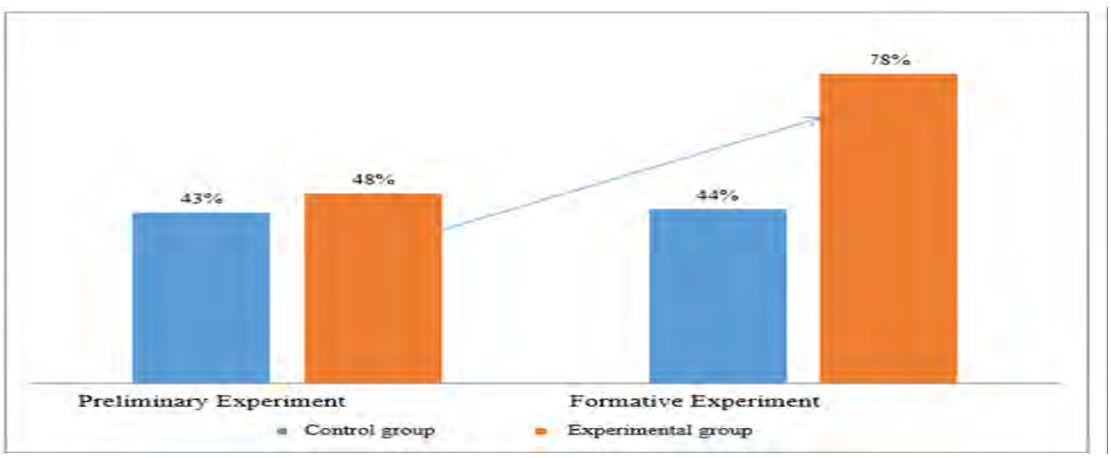

Fig. 6. The subjects' Interest in Studying the Discipline

"Methods for Teaching Geography"

The following are data that describe the impact of using interactive teaching methods on the professional competence of pre-service geography teachers. Of all the methods used, the greatest number of experimental group participants, 68 students (26%), were interested in simulation games. Workshops, brainstorming, and viewing and analyzing educational videos did not go unnoticed either, with interest from 57 (22%), 44 (17%) and 29 (11%) subjects, respectively. The least popular methods

were videoconferencing and a virtual tutorial, with only 5 (2%) and 8 (3%) subjects, respectively, showing interest (Fig. 7).

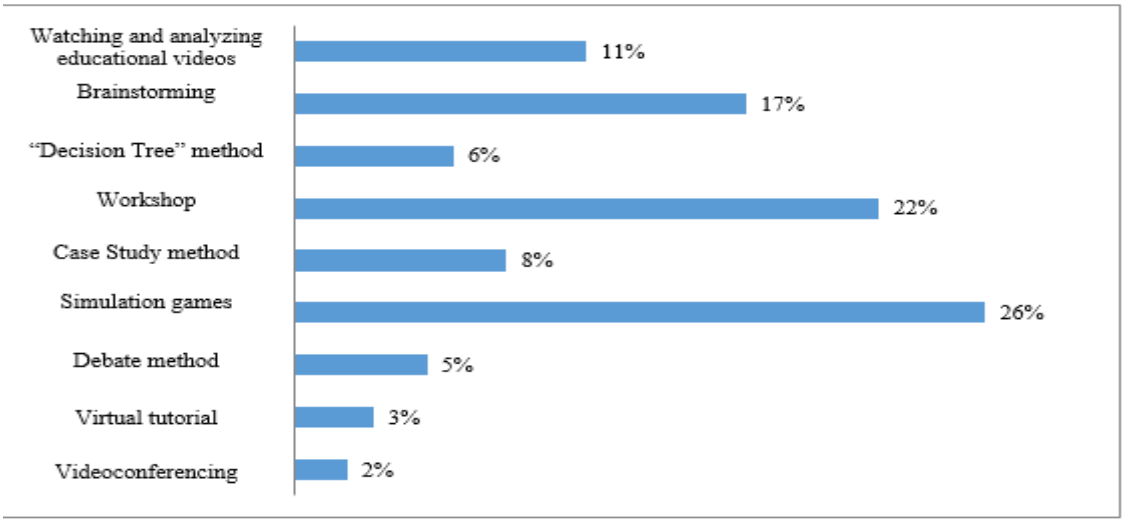

Fig. 7. The Level of the Students' Interest in the Interactive Teaching Methods

192 participants in the experimental group assessed indicated that they had acquired certain skills in the course of interactive training in the method of teaching geography (40%) (Fig. 8).

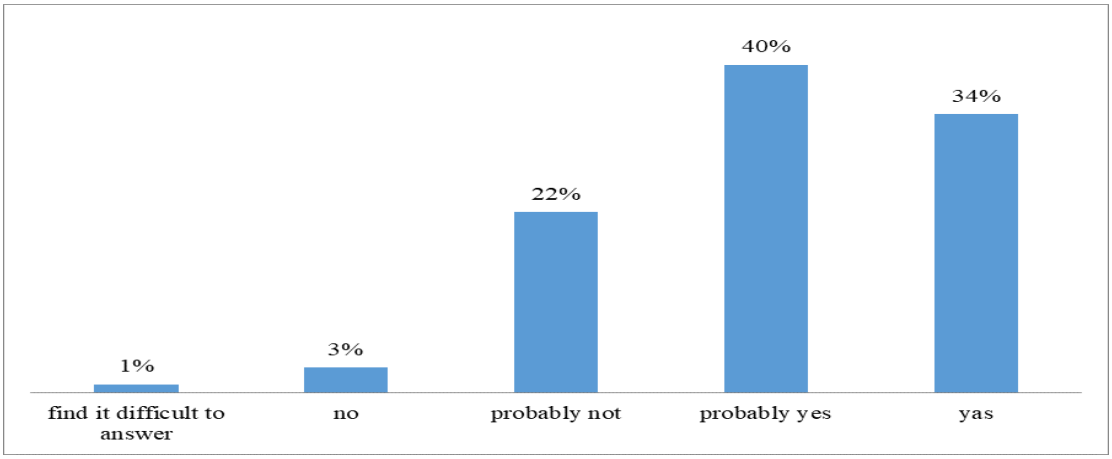

Fig. 8. Evaluation of Skills Acquired Through the Interactive Teacher Training

4. Discussion

The data obtained in the surveys show that the participants in the experimental group had scores 28% higher on average than those in the control group so they evaluated the readiness for teaching geography better. The results demonstrate the strengthening of the gnoseological and personal components relative to the pre-service teacher training. Using interactive teaching methods promotes individual development and interpersonal communication between pre-service geography teachers. The study results show that the pre-service geography teachers' interest in the discipline "Methods for

Teaching Geography" and their use of non-standard approaches to solving methodological and professional problems during the pre-service teacher training directly affect their self-esteem and, subsequently, increase their professional competence.

The participants are also more interested in studying the discipline "Methods for Teaching Geography" than the participants in the control group. The findings indicate that they received sufficient educational resources to work in a world where scientific knowledge is rapidly expanding, and the faculty members succeeded in implementing relevant education technologies. These resources prove the development of the praxiological component of the pre-service teacher training. Their interest in teaching geography may rely upon their image of a geography teacher from their own experience. Researchers from Finland (Pellikka, Lutovac, and Kaasila, 2018) purport that the pre-service geography teachers' memories of their own geography teachers in school can affect their perception of the role of the teacher and awareness of their future as a geography teacher.

The findings demonstrate the need to implement the interactive training of pre-service geography teachers. The interactive methods "contribute to better activity and learning/mastering certain geographic content by students" and "give positive results in terms of acquiring knowledge, skills, and abilities by students" (Lukić et al., 2016, p. 262). It is critical that there should be a tighter coherence between classroom and practical experience, which results in improved teacher training programs (Phillips & Chetty, 2018) and the enhanced professional competence of pre-service geography teachers. The coherence can be achieved if the interactive teacher training is organized so that both faculty members and pre-service geography teachers are aware of employing interactive teaching methods. These ideas are integrated in the resource book, which we have prepared for faculty members who plan to effectively implement interactive teaching methods in teaching the discipline "Methods for Teaching Geography".

According to the results of the experiment, pre-service geography teachers showed the greatest interest in the game forms of interactive teaching methods: the simulation game and workshop. These methods contributed more to planning and conducting geography school lessons, which appeared to be a valuable experience in enhancing their professional competence. In fact, the pre-service geography teachers were willing to use the acquired knowledge, abilities, and skills for performing their microteaching activities and analyzing other students'. These outcomes relate to substantive characteristics of their professional competence. The microteaching activities improved their professional skills in planning parts of geography school lessons and allowed the students to feel confidence in conducting them. Structural characteristics of professional competence are incorporated in these achievements. The survey results indicate the pre-service geography teachers' readiness for teaching geography, which correspond to mindset characteristics of professional competence. Interactive teaching methods help strengthen the axiological and personal components of the pre-service teacher training. These components reflect pre-service geography teachers' mindset, which determines both their professional competence and successful implementation of professional activity. If the chosen profession corresponds to the individual and social demands, pre-service geography teachers can benefit from the "individual development and personality perfection" (Kontvainas, 2011).

The experimental results correlate with Australian data from 20 years ago that describes the significant role of progressive methods in teaching geography, although the methods were rarely used in their entirety (Ballantyne et al., 1993). Other researchers from Australia, Harte and Reitano (2015),

point out the importance of interactive teaching methods. These methods contribute to deeper theoretical knowledge of the subject and the development of geography teaching skills.

In addition to studying geography, using modern education technologies can increase the professional competence of pre-service geography teachers. This idea of the American researcher Mitchell (2018) is confirmed by the experimental results in the article. The researcher established the usefulness and practicality of the improved pre-service geography education methods course after analyzing pre-service geography teachers' evaluations and interviews. The results demonstrate the need to deepen the geography content with other content areas and implement relevant technologies in order to enhance their professional competence (Isik & Jallad, 2019).

Tan (2017), a researcher from Singapore, discusses the impact of modern information and communication technologies on the professional competence of pre-service geography teachers. She considers the mindset as a component of professional competence from four perspectives: a confident person, a self-directed student, an active learner, and a conscious citizen. These positions correspond to the idea of pre-service geography teachers being prepared for the professional activity described in this article.

This study describes an increase in the professional competence of pre-service geography teachers as a result of the interactive teacher training on how to effectively teach geography. This confirms the effectiveness of interactive teaching methods in the professional training of pre-service geography teachers.

5. Conclusion

The study describes the interactive training of geography teachers as an effective way to train pre-service geography teachers in the teacher training institution. Owing to the interactive training, pre-service geography teachers are able to carry out their professional activity in a world where scientific knowledge is rapidly expanding. The interactive training is aimed at promoting students' engagement and cooperation during the pre-service teacher training.

A positive assessment of willingness among pre-service geography teachers to teach geography in secondary school and the increased professional competence testify to the effectiveness of using interactive teaching methods during the pre-service teacher training. These results reflect a professionally competent mindset, which determines the enhanced professional competence and successful implementation of professional activity.

The results of the study enrich the theory and methodology for the pre-service training of geography teachers in terms of implementing innovative teaching methods. The data obtained are applicable to the assessment of their professional competence and can be used by faculty members to assess the effectiveness of teaching the discipline "Methods for Teaching Geography" using interactive teaching methods.

6. Recommendation for Future Research

This study emphasizes studying the professionally competent mindset of pre-service geography teachers. The authors seek to continue this work by exploring the substantive and structural elements of that professional competence while pre-service geography teachers are studying the discipline

"Methods for Teaching Geography". Together, these characteristics will reveal the features of the professional aptitude of pre-service geography teachers, as well as show how their scientific and practical knowledge is formed to solve practical problems.

It is reasonable to study in detail the development of components of the pre-service teacher training: gnoseological, axiological, praxiological, and personal. More elaborate questionnaires on the students' ideas and attitudes towards the professional activity of a geography teacher will assist. Assessing the level of each component will enhance the research findings that describe the effect of interactive teaching methods on the development of professional competence of geography teachers. These findings will demonstrate the overall level of the professional competence and explain which specific skills acquired through the interactive teacher training should be enhanced. In this regard, there should be designed a program to develop skills of pre-service and in-service geography teachers.

Meaningful data can be obtained after analyzing the effect of interactive teaching methods on the development of professional competence, as it pertains to pre-service teachers of different social sciences. The comparative analysis of the methods used in teaching geography, history, and social studies will contribute to the guidance on the effective use of interactive teaching methods in instructing pre-service teachers of social sciences. Also, the relevant advanced course for in-service teachers of social sciences will be useful.

References

Afrasiabifar, A., & Asadolah, M. (2019). Effectiveness of shifting traditional lecture to interactive lecture to teach nursing students. *Investigacion y Educacion en Enfermeria, 37*(1), e07. Retrieved from https://doi.org/10.17533/udea.iee.v37n1a07

Al-Nofli, M. A. (2013). The state of geography in basic education schools in Muscat, Oman. *International Research in Geographical and Environmental Education, 22*(2), 109-119. Retrieved from https://doi.org/10.1080/10382046.2013.778711

Avralev, N., & Efimova, I. (2015). University rankings as a tool for assessing the quality of education in the context of globalization. *Asian Social Science, 11*(10), 292-298. Retrieved from https://doi.org/10.5539/ass.v11n10p292

Ballantyne, R., Lidstone, J., & Packer, J. (1993). A critically reflective pre-service geography teacher education course: Attitude and practice changes among graduates. *International Research in Geographical and Environmental Education*, 2(1), 41-50. Retrieved from https://doi.org/10.1080/10382046.1993.9964895

Béneker, T., Palings, H., & Krause, U. (2015). Teachers envisioning future geography education at their schools. *International Research in Geographical and Environmental Education*, 24(4), 355-370. Retrieved from https://doi.org/10.1080/10382046.2015.1086102

Bijsterbosch, E., Béneker, T., Kuiper, W., & van der Schee, J. (2019). Teacher professional growth on assessment literacy: A case study of prevocational geography education in the Netherlands. *Teacher Educator*, 54(4), 420-445. Retrieved from https://doi.org/10.1080/08878730.2019.1606373

Black, J., & Mischel, L. (2020). Grassroots entrepreneurial program: Developing best practices. *Journal of Small Business & Entrepreneurship*. Retrieved from https://doi.org/10.1080/08276331.2020.1728491

Bladh, G. (2020). GeoCapabilities, *Didaktical* analysis and curriculum thinking – furthering the dialogue between *Didaktik* and curriculum. *International Research in Geographical and Environmental Education, 29*(3). Retrieved from https://doi.org/10.1080/10382046.2020.1749766

Boehm, R. G., Brysch, C. P., Mohan, A., & Backler, A. (2012). A new pathway: Video-based professional development in geography. *Journal of Geography*, 111(2), 41-53. Retrieved from https://doi.org/10.1080/00221341.2011.584068

Caetano, N., & Felgueiras, M. (2019). Sustainable development in higher education: Different teaching & learning approaches. In *Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality (TEEM 2019)*. ACM, New York, NY, USA. Retrieved from http://dx.doi.org/10.1145/3362789.3362950

Cebesoy, Ü. B. (2019). Pre-service teachers' opinions about a two-day climate change education workshop. *International Research in Geographical and Environmental Education, 28*(3), 211-227. Retrieved from https://doi.org/10.1080/10382046.2019.1579982

Chikina, Y. (2016). Teoreticheskie aspekty vybora aktivnyh form i interaktivnyh metodov v processe professional'noj podgotovki budushchih uchitelej geografii. *Nauchnye vedomosti. Seriya Gumanitarnye nauki*, № 21(242), 31, 185. Retrieved from https://cyberleninka.ru/article/n/teoreticheskie-aspekty-vybora-aktivnyh-form-i-interaktivnyh-metodov-v-protsesse-professionalnoy-podgotovki-buduschih-uchiteley/viewer

Cief, R., & Niznansky, B. (2016). The use of concept of "conceptual basis" in students' adaptation to bachelor's degree in Geography teacher training programme. *Geograficke Informacie, 20*(2), 38-48. https://dspace.tul.cz/handle/15240/30638

Dobrynina, T. N. (2014). Interaktivnoe obuchenie v sisteme vysshego obrazovaniya: monografiya. Novosibirsk: Izd-vo NGPU, 2014. http://vestnik-cspu.ru/en/articles/7/pedagogicheskie-nauki/graficheskiy-planshet-kak-sredstvo-obucheniya-detey-starshego-doshkolnogo-vozrasta.html

Geng, J., Chai, C.-S., Jong, M. S.-Y., & Luk, E. T.-H. (2019). Understanding the pedagogical potential of Interactive Spherical Video-based Virtual Reality for the teachers' perspective through the ACE framework. Interactive Learning Environments. Retrieved from https://doi.org/10.1080/10494820.2019.1593200 .

Gentleman, R., Ihaka, R., Bates, D., Chambers, J., Dalgaard, P., Hornik, K., & Murdoch, D. (2018). R (Version 3.5.1) [language and environment for statistical computing]: The R Foundation. Retrieved from https://www.r-project.org/

Harte, W. & Reitano, P. (2015). Pre-service geography teachers' confidence in geographical subject matter knowledge and teaching geographical skills. *International Research in Geographical and Environmental Education*, 24(3), 223-236. Retrieved from https://doi.org/10.1080/10382046.2015.1034458

Hong, J. E. (2018). Critical citizenship education through geography. *International Journal of Geospatial and Environmental Research, 5*(3), 1-13. Retrieved from https://dc.uwm.edu/ijger/vol5/iss3/7/

Isik, B., & Jallad, S. T. (2019). The potential of social media and nursing education: E-professionalism, nurse educators' learner role, benefits, and risks. *New Trends and Issues Proceedings on Advances in Pure and Applied Sciences*, (11), 30–38. https://doi.org/10.18844/gjpaas.v0i11.4310

Joao Mimoso, M., Bravo, B. M., & Gomes, J. C. (2018). The teaching of law post Bologna. *Global Journal of Sociology: Current Issues*, *8*(1), 30–36. https://doi.org/10.18844/gjs.v8i1.3412

Karaca, A. (2020). Connection of architectural education with the technological world in Northern Cyprus. *International Journal of New Trends in Social Sciences*, *4*(1), 36–50. https://doi.org/10.18844/ijntss.v4i1.5138

Kelkay, A. D., & Mola, S. (2020). The status of teachers' motivation and process of quality education: The case of primary school teachers, Ethiopia. *Global Journal of Guidance and Counseling in Schools: Current Perspectives*, *10*(1), 01–11. https://doi.org/10.18844/gjgc.v10i1.4448

Kholoshyn, I. V., Bondarenko, O. V., Hanchuk, O. V., & Shmeltser, E. O. (2019). Cloud ArcGIS Online as an innovative tool for developing geoinformation competence with future geography teachers. In A. E. Kiv & V. N. Soloviev (Eds.), *CEUR Workshop Proceedings*, 2433 (pp. 403-412). CEUR-WS. https://arxiv.org/abs/2007.10774

Kontvainas, R. (2011). Several peculiarities of student professional single-mindedness in geography studies. *Pedagogika, 96*, 76-82. https://www.ceeol.com/search/article-detail?id=54736

Kramáreková, R., Nemčíková, M., Rampašeková, Z., Svorad, A., Dubcová, A., & Vojtek, M. (2016). Cartographic competence of a geography teacher – current state and perspective. In T. Bandrova & M. Konecny (Eds.), *Proceedings, 6th International Conference on Cartography and GIS* (pp. 200-209). Albena, Bulgaria. https://www.researchgate.net/profile/Temenoujka-Bandrova/publication/309772611_6th_International_Conference_on_Cartography_and_GIS/links/5d13644a299bf1547c7f9906/6th-International-Conference-on-Cartography-and-GIS.pdf#page=200

Krivdina, I. YU., SHevchenko, I. A., Lebedeva, N. S., Kutasova, E. V. (2016). Formirovanie professional'no-pedagogicheskoj kompetentnosti budushchego uchitelya geografii v processe pedagogicheskoj praktiki. *Sovremennye naukoemkie tekhnologii*, № 8, 326–329. Retrieved from https://top-technologies.ru/ru/article/view?id=36154

Kutbiddinova. R. A., Eromasova, A. A., & Romanova, M. A. (2016). The use of interactive methods in the educational process of the higher education institution. *International Journal of Environmental and Science Education, 11*(14), 6557-6572. Retrieved from https://files.eric.ed.gov/fulltext/EJ1115891.pdf

Lambert, D. (2011). Reviewing the case for geography, and the 'knowledge turn' in the English National Curriculum. *Curriculum Journal*, 22(2), 243-264. Retrieved from https://doi.org/10.1080/09585176.2011.574991

Lamiadiati, Darwin, & Sukarman Purba (2017). Professional competence strategy teacher of Geographical Eyes (Casue state senior high school 3 medan and State senior high school 15 medan*). IOSR Journal of Research & Method in Education*, 7(6), 39-45. Retrieved from https://doi.org/10.3726/92126_540

Lukić, T., Božić, S., Sakulski, D., Babić-Kekez, S., Bibić, L. I., Besermenji, S., Bura, M., Dubovina, Z., Davidović, D., & Dolinaj, D. (2016). Achieving competencies with grammar school students through utilisation of selected didactical principles in traditional and active teaching – geography class case study: "Hydrography of Serbia". *Geographica Pannonica, 20*(4), 254-264. Retrieved from http://dx.doi.org/10.18421/GP20.04-07

Martins, F. (2015). The initial training of geography teachers at the University of Porto: Model and training, practices and representations. *Review of International Geographical Education Online*, 5(1): 2146-0353. Retrieved from https://rigeo.org/vol5no1/Number1Spring/RIGEO-V5-N1-2.pdf

Mitchell, J. T. (2018). Pre-service teachers learn to teach geography: a suggested course model. *Journal of Geography in Higher Education*, 42(2), 238-260. Retrieved from https://doi.org/10.1080/03098265.2017.1398719

Mizambaeva, F. K. & Baimyrzaev. K. M. (2019). Conditions for the formation of professional competence of an intending geography teacher. *Espacios*, 40(9), 10. Retrieved from https://www.revistaespacios.com/a19v40n09/19400910.html.

Ningrum, E. (2019). Mapping of pedagogic competency of geography teacher in scientific learning based-on curriculum 2013. In I. A. Nandi, I. N. K. M. Isa, N. Nayan, M. F. Dziauddin, Y. A. Junun, Z. Sahdan, & F. C.

Leh (Eds.), *IOP Conference Series: Earth and Environmental Science*, 286(1) (5 p.). Malaysia: IOP Publishing. Retrieved from https://doi.org/10.1088/1755-1315/286/1/012007

Nitulescu, L., & Rotaru, I. (2012). Challenges of the interactive methods based on the socio-constructivist theory in teachers' training. *Revista de Cercetare si Interventie Sociala, 39*, 134-153. Retrieved from https://www.rcis.ro/images/documente/rcis39_08.pdf

Osuch, W. (2013). The sources of geographical knowledge and teaching strategies – the results of the research into geography teachers' competences. *Czasopismo Geograficzne*, 84(1-2), 53-63. https://agro.icm.edu.pl/agro/element/bwmeta1.element.agro-795981fe-7714-4d56-a414-48c939404858

Ozdemir, S., & Ummanel, A. (2016). Perceptions and attitudes of preschool teacher candidates towards mathematics. *International Journal of Innovative Research in Education*, *3*(1), 01–09. https://doi.org/10.18844/ijire.v3i1.473

Pellikka, A., Lutovac, S., & Kaasila, R. (2018). The nature of relation between pre-service teachers' views of an ideal teacher and their positive memories of biology and geography teachers. *Nordic Studies in Science Education*, 14(1), 82-94. Retrieved from https://doi.org/10.5617/nordina.4368

Phillips, H. N., & Chetty, R. (2018). Enhancing teacher training skills by strengthening the teaching practice component. *Education and Training, 60*(3), 251-262. Retrieved from https://doi.org/10.1108/ET-02-2017-0024

Pirbhai-Illich, F., & Martin, F. (2020). Fundamental British values: Geography's contribution to understanding difference. *Primary Geography, 103*, 23-25. https://www.geography.org.uk/write/MediaUploads/Training%20and%20events/Conference/Saturday_12_PG_AUT_2020_PIRBHAI_MARTIN.pdf

Qassem, M. (2020). EFL students' perception of the role of teaching novels in enhancing writing skills. *Global Journal of Foreign Language Teaching*, *10*(4), 224–239. https://doi.org/10.18844/gjflt.v10i4.4994

Richter, B. W. & Van Der Westhuizen, C. P. (2005). DVD supportive training for geography teacher students as an interim for ICT in developing countries. In *3rd International Conference on Education and Information Systems: Technologies and Applications, EISTA 2005*, 1 (pp. 355-360). Orlando, FL; United States: International Institute of Informatics and Systems. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.298.8200&rep=rep1&type=pdf

Rönnström, N. (2015). Educating competitive teachers for a competitive nation? *Policy futures in Education*, 13(6), 732-750. Retrieved from https://doi.org/10.1177%2F1478210315595171

Rosli, R., & Suib, A. F. (2020). Teachers' knowledge about teaching mathematics to learning disabilities students. *International Journal of Special Education and Information Technologies*, *6*(1), 37–47. https://doi.org/10.18844/jeset.v6i1.5416

Safonova, E. I. (2011). Rekomendacii po ispol'zovaniyu innovacionnyh obrazovatel'nyh tekhnologij v uchebnom processe. Moscow. https://www.mdpi.com/2071-1050/11/8/2225

Schuler, S., Fanta, D., Rosenkraenzer, F., & Riess, W. (2018). Systems thinking within the scope of education for sustainable development (ESD) – a heuristic competence model as a basis for (science) teacher education. *Journal of Geography in Higher Education*, 42(2, 3), 192-204. https://doi.org/10.1080/03098265.2017.1339264

Scoffham, S. (2013). Geography and creativity: Making connections. In S. Scoffham (Ed.). *Teaching geography creatively* (pp. 1-13). London and New York: Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315667775-8/geography-creativity-making-connections-stephen-scoffham

Seferoglu, S. S., & Celen, F. K. (2020). Improving the use of ICT through online professional development platform based on metacognitive strategies. *Global Journal of Information Technology: Emerging Technologies*, *10*(1), 45–59. https://doi.org/10.18844/gjit.v10i1.4747

Sharipova, D. (2020). Perceptions of national identity in Kazakhstan: Pride, language, and religion. *The Muslim World, 110*(1), 89-106. Retrieved from https://doi.org/10.1111/muwo.12320

Shimlina, I. V., & Suvorova, L. B. (2018). The concept of sustainable development as adopted by environmental and geographical school education: Russia and Kazakhstan. *Espacios, 39*(17), 32. Retrieved from https://www.revistaespacios.com/a18v39n17/a18v39n17p32.pdf

Stojšić, I., Ivkov-Džigurski, A., & Marĭić, O. (2019). The readiness of geography teachers to use mobile devices in the context of immersive technologies integration into the teaching process. *Geographica Pannonica*, 23(2), 122-134. http://dx.doi.org/10.5937/gp23-20762

Stupnikova, A. D. (2013). Metodicheskie osnovy podgotovki budushchego uchitelya geografii v usloviyah Federal'nogo gosudarstvennogo obrazovatel'nogo standarta. *Elektronnyj nauchno-obrazovatel'nyj zhurnal VGSPU «Grani poznaniya»*, № 3(23), 123–127. Retrieved from http://grani.vspu.ru/files/publics/1369832672.pdf.

Sudtho, J., Singhasiri, W., & Jimarkon, P. (2015). Using symbolic interactionism to investigate teachers' professional identity. *Pertanika Journal of Social Sciences and Humanities*, 23(4), 1153-1166. Retrieved from http://www.pertanika.upm.edu.my/Pertanika%20PAPERS/JSSH%20Vol.%2023%20(4)%20Dec.%202015/24%20JSSH%20Vol%2023%20(4)%20Dec%202015_pg1153-1166%20(JSSH%201250-2015).pdf.

Taktek, K. (2016). Transactional analysis: Principal attributes and effects of the dynamic of ego states on intrapersonal and interpersonal relationships. In K. Taktek (Ed.), *Transactional Analysis as a Communication Framework and Dynamic Strategy for Peace Education: Practices, Trends and Challenges for International Geopolitical Conflict Resolution and Reconciliation* (pp. 19-42). Hauppauge, NY: Nova Science Publishers. https://squ.pure.elsevier.com/en/publications/the-radical-motives-for-the-american-invasion-of-iraq-political-i

Tal, T. (2010). Pre-service teacher's reflections on awareness and knowledge following active learning in environmental education. *International Research in Geographical and Environmental Education, 19*(4), 263-276. Retrieved from https://doi.org/10.1080/10382046.2010.519146

Tan, G. C. I. (2017). Reconceptualising experiential learning in the pre-service geography fieldwork module. In O. S. Tan, W.-C. Liu, & E.-L. Low (Eds.), *Teacher Education in 21st Century: Singapore's Evolution and Innovation* (pp. 155-171). Retrieved from https://doi.org/10.1007/978-981-10-0785-9_5

Tanner, J. (2021). Progression in geographical fieldwork experiences. *Primary Geography, 104*, 13-17. https://books.google.com/books?hl=en&lr=&id=vlETEAAAQBAJ&oi=fnd&pg=PR11&dq=Tanner,+J.+(2021).+Progression+in+geographical+fieldwork+experiences.+Primary+Geography,+104,+13-17.&ots=HW-PEzksUx&sig=QM9DMi7THBqvgzsuSPva7acH500

Temirbekov, A., & Yesnazarova, U. (2013). Globalization, regionalization and objectives of geographical education. *Procedia – Social and Behavioral Sciences, 89*, 422-424. Retrieved from https://doi.org/10.1016/j.sbspro.2013.08.871

Trskova, K. (2021). Streamline of the teaching methods for enhancing the student motivation at the University. *New Trends and Issues Proceedings on Humanities and Social Sciences*, *3*(2), 14–22. https://doi.org/10.18844/gjhss.v3i2.1594

UNDP in Kazakhstan (2004). *Human Development Report. Education for all: The key goal for a new millennium*. Almaty, Kazakhstan: UNDP in Kazakhstan. https://doi.org/10.1080/02626667.2018.1447111

Veronek, N. (2010). The role of interactive whiteboard in geography didactics. *Geografija v Soli*, 19(2), 29-34. https://files.eric.ed.gov/fulltext/EJ1236334.pdf

Wassermann, S. (2017). *The art of interactive teaching: Listening, responding, questioning*. New York: Routledge. https://doi.org/10.4324/9781315174624

Yehya, F. (2020). Creative thinking skills in the Lebanese schools from secondary physics teachers' perspectives. *International Journal of Learning and Teaching*, *12*(2), 115–130. https://doi.org/10.18844/ijlt.v12i2.4718

Zhanguzhinova, M., Magauova, A., Salkhanova, Z., & Urazbayeva, G. (2019). Review of the international experience upon professional preparation of teachers. *Rural Environment, Education, Personality, 11,* 155-161. Retrieved from https://www.researchgate.net/deref/https%3A%2F%2Fdoi.org%2F10.22616%2FREEP.2018.018