

Conditions for the Formation of Professional Competence of an Intending Geography Teacher

Condiciones para la formación de la competencia profesional de un profesor de geografía integral

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ABSTRACT:

Geography as a subject plays an important role in the study of the geographical environment in its relation to the life and activities of a person and society. At present moment, there is a shortage of competent geography teachers with sufficient methodological preparation; thus, it is necessary to develop a new approach to planning and implementation of relevant programs at a teacher training university. The authors emphasize the need to improve the methodological foundations of the intending geography teachers' preparation. The article considers the main aspects of the contents and essence of the professional competence of students majoring in Education with a focus on the specifics of their professional training. The article provides theoretical substantiation of pedagogical conditions that ensure the effective formation of professional competence of intending teachers of Geography during their study at university. Nowadays, society requires teacher training universities to prepare teachers capable of solving tasks set for them independently and creatively, as well as to be able to independently search for new geographic knowledge and apply it in non-standard situations.

Keywords: pedagogical conditions, motivation, innovative technologies, practice, competence,

RESUMEN:

La geografía como materia desempeña un papel importante en el estudio del entorno geográfico en su relación con la vida y las actividades de una persona y la sociedad. En el momento presente, hay una escasez de profesores de geografía competentes con suficiente preparación metodológica; por lo tanto, es necesario desarrollar un nuevo enfoque para la planificación e implementación de programas relevantes en una universidad de formación docente. Los autores enfatizan la necesidad de mejorar los fundamentos metodológicos de la preparación de los profesores de geografía. El artículo considera los aspectos principales de los contenidos y la esencia de la competencia profesional de los estudiantes que se especializan en educación con un enfoque en los aspectos específicos de su formación profesional. El artículo proporciona una fundamentación teórica de las condiciones pedagógicas que aseguran la formación efectiva de la competencia profesional de los futuros profesores de geografía durante su estudio en la universidad. Hoy en día, la sociedad requiere que las universidades de formación docente preparen profesores capaces de resolver tareas que se les asignen de forma independiente y creativa, así como que puedan buscar de forma independiente nuevos conocimientos geográficos y aplicarlos en situaciones

1. Introduction

Today, it is particularly important to develop professional competence of intending geography teachers capable of working in the conditions of rapidly increasing volume of scientific information and introduction of innovative educational technologies. After all, a geography teacher is to develop schoolchildren's cognitive and creative abilities, build their scientific worldview, develop geographical thinking and the ability to extract information from various sources, to identify and analyze links between natural and social processes.

After Kazakhstan's joining to the Bologna process, it became necessary to adjust the national education system in accordance with international standards. International recognition of the country's education is an important issue: the level of training, recognition of Kazakhstan diplomas, degrees and qualifications in the international market of educational services.

The professional competence of intending geography teachers includes not only their theoretical level of knowledge, ability to use geographic terms and concepts, but also knowledge and skills in the field of psychology and pedagogy, as well as personal qualities of a citizen (being persistent, decisive, dedicated, hard-working, etc.) that may influence personalities of their students.

Since the formation and further development of professional competencies of intending geography teachers take place during field trips, it is necessary to pay more attention to the organization and quality of their implementation. Also, the list of competencies is based on the needs of employers and depends on the specifics of the target audience. This results in the increasing role of the methodological organization of both hands-on teaching and field trips.

The relevance of intending geography teachers training is presented in the State Program for Education Development for 2011–2020, approved in 2010, the main idea of which is to provide training based on active teaching methods. Therefore, in the context of the current trends in education, the preparation of an intending geography teacher should undergo fundamental changes. In this regard, it is necessary to alter the ways of providing educational services and organizing education in the system of higher education. This is especially important in relation to rapidly developing innovative technologies and the need to include them in the training of intending teachers of geography.

A specific professional feature of modern geography teachers is that today their work acquires regulatory characteristics, which includes requirements for mastering professional qualities, technologies, methods, forms, and teaching means, depending on the goals and priorities set by the state.

Most studies considering the issues of improving the preparation of an intending geography teacher regarding the knowledge of both the subject and methodology focus on the holistic and integrated concept of the professional and pedagogical training of an intending teacher of geography.

2. Literature review

Increasing the quality of training and improving the educational system are possible as long as certain specific conditions are observed. The concept of "pedagogical conditions" includes such fundamental structures of training and education as purpose, content, methods, means and forms. This is a specific feature of this concept.

Another characteristic feature of the term explored is the integration of all the components and parts of the holistic process of training and education. According to V.L. Belin and E.A. Gonchar (2013), pedagogical conditions are the circumstances of the learning process that are specially selected and imply the creation and further use of the elements of content,

methods, and forms of education in order to achieve the established didactic goals.

The very concept of "competence" in pedagogical works generally includes knowledge, skills, abilities (the content), the level of professional skills and personality substructure (the structural characteristic), a specialist's readiness for the upcoming work (the characteristic of the personality). Let us consider the essence of the concept "competence" in general.

I.Yu. Krividina and others (2016) define "competence" as a characteristic according to the meaning of the adjective "competent". Thus, it becomes necessary to consider the meaning of the latter term. In various pedagogical sources, "competent" is defined as knowledgeable, informed, proficient in some field, or possessing solid knowledge in some area (State Program for Education Development for the years of 2011-2020, 2010).

Scientists E.M. Kuzmina (2016), Yu.N. Emelyanov (2005) introduced the term "professional pedagogical competence". This term is understood as a set of fundamental skills of a teacher concerning the formation of scientific and practical knowledge for the most efficient solution of practical problems.

According to the results of the conducted analysis, we can state that the concept "competence" originates from competency that denotes the sphere where a person can apply his knowledge and skills. Competency can also be called a primary category which represents a system of certain knowledge "background" of a person.

Having studied the substantiations of pedagogical professional competence (Zimnyaya, 2006; Raven, 2013; Khutorskoy, 2013), we could establish that researchers define teacher's competences in a different way, regarding both quantitative (up to thirty-nine) and qualitative aspects.

However, these definitions, along with fundamental differences, have quite many common features: in some cases, experience and knowledge are seen as the basis, in others – the abstract concept of "a range of issues".

Researchers E.Yu. Petrova and T.V. Ershova (2016) use the definition of G. Winer as the basis of their study. G. Winer considers competence as an adequate orientation of a person in work, education, politics, and society in general. This opinion allows us give definition of the concept of "professional competence".

Therefore, professional competence of a teacher is a combination of professional and personal qualities that are necessary for high-quality work in education.

If a teacher works at a sufficiently high level, achieving high results, then this teacher can be called professionally competent.

Certainly, the formation of teacher's competence takes place under certain conditions conducive to this process.

Pedagogical conditions are explored in the works of W. Admiraal and A. Berry (2016), A.Ya. Nain (1995), E.V. Yakovlev and N.O. Yakovleva (2016), N.V. Ippolitova and N. Sterkhova (2012), M.V. Zvereva (1987), B.V. Kupriyanov and S.A. Dynina (2014), presenting numerous interpretations of the concept "pedagogical conditions". Scientists' views on the definition of this concept can be classified into several categories.

The first one is represented by the scientists defining pedagogical conditions as a set of certain measures of pedagogical influence and facilities (Andreev, 2016; Nain, 1995; Yakovlev & Yakovleva, 2016).

The second group includes such scientists as N.V. Ippolitova (2014) and M.V. Zvereva (1987). They consider pedagogical conditions as one of the components of the pedagogical system as a whole.

According to scientists B.V. Kupriyanov and S.A. Dynina (2014), S.A. Lysenko (2015), A.O. Malykhin (2013), R.S. Nemov (2013), representing the third group, pedagogical conditions are the systematic work for clarifying patterns that are stable links of the educational process, ensuring the verifiability of scientific and pedagogical research findings. However, the scientists of this group emphasize the need for the alignment of the pedagogical conditions tested within the hypothesis of a study.

K. Livingston (2014) explores the role of tutorship in the professional development of Spanish students pursuing their first degree in Education. He aims to determine how intending teachers build up knowledge within different approaches to training: dialogue or regular tutorship meetings. In his opinion, these tutoring styles contribute to different, but complementary, understanding of the practice, and signify the influence different approaches have on teaching the type of knowledge that is shared and created together at the after-class tutorship meetings.

Researchers N. Ippolitova and N. Sterkhova (2012) note that limited consideration of the key concept "condition", incomplete awareness of trends and certain conditions, choosing pedagogical conditions from different classification groups complicate the process of verifying and substantiating specific pedagogical conditions that ensure high-quality training.

The abovementioned difficulties can be overcome if the research encompasses the following: detailed analysis and clarification of the meaning of the terms "conditions" and "pedagogical conditions", identification of the groups of pedagogical conditions according to the essence and characteristics of the problems these conditions aim to deal with.

The meaning and the essence of the term "condition", as well as the types of conditions have been considered from different perspectives.

Wikipedia, for example, defines the concept "condition" as a philosophic category that denotes the interaction of an object with the surrounding reality, considering the relation to itself and its inner world. The object is seen as something conditioned, and the condition – as the diversity of the objective world external to the object.

It is stated that the condition must be distinguished from the cause, because unlike the cause that directly initiates a particular phenomenon or a process, the condition forms the environment in which the latter emerges, exists and develops.

In philosophy, the concept "condition" is defined as the relationship of the object to the surrounding phenomena, without which this object cannot exist. For example, the Philosophical Dictionary says that a condition is what something else depends on, an essential component of the system of objects.

The professional competence of the teacher is actually the theoretical and practical readiness of the teacher to carry out educational activities, the level of his professionalism. The concept of professionalism means the level of systematic, effective and reliable performance of complex work by a specialist in a dynamically changing environment.

The concept "professionalism" includes the teacher's mastering the essence of professional activities which comply with commonly accepted trends and requirements of the time. Its development requires certain skills, aspiration, character, desire for life-long learning and self-development. Professionalism cannot be limited to the parameters of highly qualified work as it is a specific worldview. Having studied current requirements, we determined the following ways of the formation of a teacher's professional competence:

1. Participation in methodological associations and creative unions.
2. Scientific and research work.
3. Innovative work, mastering new pedagogical technologies.
4. Pedagogical support in various forms.
5. Participation in pedagogical contests and festivals.
6. Presentation of one's teaching experience.

These methods of teachers' development will not be effective without teachers' awareness of the need to increase their own professional competence. This awareness motivates and creates conditions for further pedagogical development. Evaluation of one's teaching experience facilitates the professional growth of a teacher, increasing one's potential for conducting research, which in turn determines one's teaching practices. Teachers should be involved in school management as it increases their professionalism (Ozhegov, 2017).

The main stages of the formation of professional competence include:

- self-analysis and understanding of the necessity;

- planned self-realization;
- actions, analysis, adjustment of one's own activities.

The purpose of teaching geography is to explain the natural phenomena on earth and their connection with people. To do this, a geography teacher should be able to formulate goals related to studying geography, and also to use all the possibilities that contribute to solving the problems posed. Emphasis should be placed on self-development, functional learning of the teacher and team work.

Competence is much more than knowledge and skills. It means the ability to meet complex requirements by involving a range of psychological and social features. For example, in Slovakia, competencies, especially key competencies, are included in the national educational program as the fundamental component (Lane & Bourke, 2017).

Professional competence of a geography teacher includes readiness and successful performance that provide high-quality teaching. In terms of structure, the professional training of a geography student includes gnoseological, axiological, praxeological, and professional-personal components (Table 1), the development of which directly facilitates an increase in the competence of the teacher.

Many researchers, along with the concept of "pedagogical competence," consider the expertise, methods and skills of the teacher (Hutmacher, 1996). Pedagogical skills are seen as a sufficient indicator of the ability to use professional knowledge and teaching tools. Pedagogical competence, respectively, is part of the pedagogical skill as it involves the use and mastery of knowledge, skills and professionally significant personal characteristics, perfected to a high level.

Table 1
Components of professional and pedagogical competence of a geography teacher

Components	Contents	Competencies
Gnoseological	Knowledge system. 1. Knowledge of geography: - understanding the role of geography in modern scientific worldview and its value; - knowledge of basic geographic concepts, theories, cause-and-effect relationships, laws, regularities underlying school geography courses. 2. Knowledge of ecology: knowledge of environmental issues as a cross-cutting line of geography; 3. Knowledge in the field of education and methods of teaching geography: - knowledge of modern teaching aids, professional methods and techniques. 4. Geographical knowledge of the teacher: geographical worldview, geographical thinking, methods of geography, geography terms.	- Readiness to use the knowledge of modern problems of science and education in solving professional tasks; - Readiness to interact with the parties of the educational process and social partners, to lead the team, tolerant perception of social, ethno-confessional and cultural differences.
	Values of the individual regarding their	- Readiness to recognize the social significance of their future profession, to have the motivation to carry out professional activities;

Axiological	educational needs, interests, emotions and attitudes to teaching, readiness for self-education and self-development.	<ul style="list-style-type: none"> - Ability to carry out professional and personal self-education, to design further learning routes and professional career; - Ability to develop the trajectory of their professional growth and personal development.
Praxeological	<p>Professional skills.</p> <ul style="list-style-type: none"> - Gnostic skills: the ability to work with scientific papers on geography, education, methodology; the ability to master the methodology of pedagogical research, etc. - Design skills: the ability to measure, observe, predict and model natural and social processes and phenomena in time and space, etc.; - Constructive skills: creating a lesson plan, selecting the best teaching methods and techniques, using modern teaching tools; - Organizational skills: the ability to organize interaction with students; teacher's ability to control oneself and be tactful in unforeseen situations, etc. - Communicative skills: the ability to carry on a conversation or a discussion; the ability to establish rapport with students, teachers, parents, etc. - Reflexive skills: self-analysis and self-esteem; the ability to adequately assess the activities of students, etc. 	<ul style="list-style-type: none"> - The ability to analyze the results of scientific research, apply them when solving specific research problems in the field of science and education, carry out independent scientific research, the ability to apply modern methods and techniques to organize learning process, diagnose and evaluate the quality of the educational process within various educational programs; - ability to develop and implement methodological models, methods, techniques of training, to analyze the results of their application in educational organizations; - ability to systematize, synthesize and disseminate Russian and international methodological experience related to teaching; - readiness to carry out professional communication to solve the problems related to teaching; - readiness to interact with the parties of the educational process and social partners, to lead the team.
Professional-personal	Emotional and intellectual features of geography teachers, as well as operational and voluntary qualities.	Readiness to work as a teacher.

3. Research methods

This issue was studied with the participation of students of Zhetysu State University doing a Geography course. The control measurement of initial knowledge and level of proficiency in professional skills was carried out at the beginning of the 2017-2018 academic year. During this period, the following parameters were taken into account: knowledge of the material, students' inclination and readiness to work in education, the ability to use innovative methods in their lessons. During the academic year a group of students did the course "Teaching geography in school" which was taught using competency-based approach, as well as a new course "Professional competence of the intending geography teacher".

When training geography teachers, we aimed to clarify the following aspects:

- science is considered as the total of problem solving experience accumulated by the mankind;
- the study of the "Fundamentals of Science" course is a means of developing one's ability to solve life problems;

- the teacher poses questions "Why?" and "How?" and answers them together with students;
- educational methods and techniques are used as independent means of achieving particular pedagogical goals;
- knowledge and skills are applied in real (or similar to real) situations;
- meaningful experience is the main result of training;
- school prepares a person for solving real life problems;
- school prepares a person to rely on themselves and be independent.

Having analyzed psychological and pedagogical publications, we could determine the pedagogical conditions that would increase the professional competence of intending teachers of geography. The following sets of conditions were developed:

Formation of students' readiness to work as a teacher. In this study we identified cognitive, social, labor and professional attitudes, each of these contributing to the development of students' wish to work in education.

Using methods of active learning. These are one of the most promising forms of training. The ability to use interactive methods in their subject is an indicator of teacher's competence.

Developing motivation. This involves building up student's confidence that the theoretical knowledge obtained can be implemented in practice.

4. Results and discussion

After analyzing the theoretical and practical experience in the development of methodological competence, we concluded that it is necessary to create such pedagogical conditions that would influence the outcome of the process. These conditions are: clarification of the essence and general structure of the professional competence of the intending geography teacher; development of the course "Professional competence of the intending geography teacher"; using modular learning technology, which facilitates the fundamental understanding of methodological knowledge and improvement of methodological skills.

The development of the course "Professional competence of the intending geography teacher" is relevant due to the following:

1. Methodology is not the key aspect in the training of natural science students. This results in a situation when the material is taught in a fragmented manner, without going into details. The material is divided within several topics and is not mastered by students systematically. We believe that this course will allow presenting the material in detail, as well as will enable a systematic approach.
2. Study and revision of this theoretical material in practical classes will encourage students to independently apply methodological knowledge and skills in future teaching.

Along with the reasons considered above, innovative processes in the school system have a significant impact on vocational education in teacher training universities. The main idea is that it is necessary to develop students' knowledge of geography.

The course of bachelor (master) of Education in the 21st century names competences associated with a specific range of courses as basic qualification indicators of higher professional education (Ozhegov, 2017).

The system of professional criteria of a geography teacher includes the system of professional criteria that reflect the specifics of mastering geography. To expand the range of learning outcomes, it is necessary to take into account local history, geo-ecological, practical, regional geographic, and cartographic aspects of geography training, its potential regarding the organization of extracurricular activities.

Taking into account the above-mentioned propositions, we believe that the following measures can form the basis for the detailed study of geographical sciences:

- using the conceptual apparatus of geography for explaining, as well as when analyzing and

- evaluating events and phenomena in different spheres of social life from the perspective of geography; explaining different opinions, conducting a discussion using geography terms;
- expanding the use of modern means of transmitting geographic information in the learning process, ability to display the available information on the map, to analyze statistical materials from the perspective of geography;
 - applying different geographical methods of local history in the educational process, taking into account the geographical features of the area, choosing resources when organizing clubs and classes in various forms.

At this point, an objective question arises: "How can one increase their professional competence?". One should actively use various pedagogical methods, especially modern innovative technologies, as well as problem-based learning, creating a lesson plan, participating in scientific conferences, and publishing the results of one's research (Danim, 2006).

After completing the above-mentioned course within four months, the students participating in the experiment showed positive results.

At the beginning of the experiment, 75% of students answered negatively to the question "Are you ready to work in education?", whereas after doing the course, this figure dropped to 3%. This demonstrates the growing interest of students in their future profession, an increase in their motivation.

At the initial stage of the experiment, 100% of the respondents assessed their readiness with 3-5 points when answering the question "How can you assess your professional readiness for working as a teacher on the scale from 0 to 10?". At the final stage, this figure increased on average up to 8 points.

During hands-on teaching at the beginning of the 4th year of study, 32% of lessons conducted by students included non-traditional, innovative teaching methods, whereas by the end of the experiment 90% classes were conducted with wide use of electronic textbooks, ICT tools, and interactive forms. This proves the formation of the necessary competencies of the intending geography teachers.

5. Conclusion

The conducted study of the professional competence of students doing a degree in natural science and education makes it possible to conclude that there are significant differences in the characteristics of its formation levels. The findings enabled us to identify certain pedagogical conditions that improve the professional training of intending geography teachers at university.

These include:

- the development of criteria and indicators to monitor the process under study;
 - the application of modular technologies in the educational process of the university which integrates the material from various courses of professional training of intending geography teachers;
 - the introduction of the elective course "Professional competence of the intending geography teacher" into curriculum of Education majors.
 - formation of students' interest in teacher's work by engaging them in the activities of local history clubs, teachers and geography associations.
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