

## **System-Didactic Complex of Training for Teachers of Natural and Geographical Disciplines**

G.S. Samigullina  
Kazan Federal University, 420008 Kazan, Russia

---

**Abstract:** Purpose of the study the development and using in the process of training teachers of natural geographical disciplines of system-didactic complex that includes diagnostics readiness of the teacher to the creative teaching activities, the implementation of inter-subject relationship, the competence approach. System-didactic complex built on metamethodic and holistic ideas. System-didactic complex allows: to claim the creativity of the teacher, the scientific potential of the fundamental disciplines of the creative potential of the teacher, going beyond disciplinary disunity, transfer logical form of scientific knowledge in activity-shape, forming a complete picture of the world, the relationship of various phenomena.

**Key words:** System-didactic complex activity approach, method, technique, creativity, comprehensive integrated task

---

### **INTRODUCTION**

In the center of the educational process is a modern teacher, performing enabling the student's personality as much as possible to fulfill your potential, develop their skills and creativity. According to Kiryushina (2013), development of scientific potential of the education system is possible by the integrity of its development. System-didactic complex teacher training course and geographical disciplines includes modules of creativity, the formation of a unified scientific view of the world (integration) and implementation of the activity, competence approach.

System-didactic complex allows impermissible under leaching of the natural sciences curriculum) claim the creativity of basic disciplines). Convert the logical form of scientific knowledge in activity-shape.

Conceptually, the system-didactic complex is based on). The determination of the National doctrine of education development strategy of the Russian Federation from the standpoint of the quality of education and conditions of its presentation). The globalization of education, inclusion of Russian education in the world educational space, built on the paradigm of competence problem.

The basic is the principle of systems, allowing to make the content of the course of preparation, taking into account the basic training of teachers, a combination of theoretical knowledge and pedagogical skills, the development of the creative potential of teachers to go beyond disciplinary disunity.

### **MATERIALS AND METHODS**

The proposed approach is especially important to the development and creation of a model teacher training course and geographic disciplines on the basis of system didactic approach.

At first, the current situation of education demand model is not only a subject teacher in charge of the standard norms but also ready to give up the habits of behavior and stereotypes, perception and thinking. The teacher's role is changing with the directives of the executive on the role of the subject, modernizing the educational process (Kovalevskaya, 2013). Finds it necessary to enrich the experience of the modern teacher of theoretical and methodological, design, design methodological, professional-activity, diagnostic, research, information and communication, predictive competences.

Second, the decline in the quality of education in geography, biology, chemistry, physics, due to the orientation towards checking skills to apply their knowledge (to describe the chemical properties of the substance, etc.) to operate with the basic concepts. Confirms the need for greater attention in the process of repetition, generalization and systematization of educational material on the development of abilities to allocate most importantly to establish causal relationships. At the beginning of the third millennium, the world educational space, part of which is Russia, recognizes the fundamental principle of holism (holo-awhole) "integratism", "integrity". The principle of

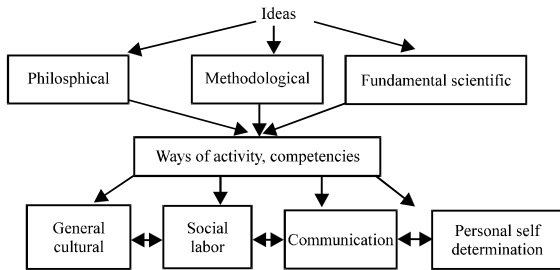


Fig. 1: Ideas deprecator of education content

holism is the basis of the objective and the content of education ahead of subject (biological, geographical, physical, chemical) techniques (Fig. 1).

Transprofessional holistic orientation training is dictated by Russia's participation in the UNESCO program "Open educational system for the 21st century." The international community puts before the formation of a number of strategic challenges including: forming a complete picture of the youth of the world, dialectical relationship science and human understanding of various phenomena.

**RESULTS AND DISCUSSION**

The structure of complex systems-didactic teacher training course and geographic disciplines is shown in Fig. 2 and includes the following steps. The first stage involves diagnostic readiness of the teacher of geography and related disciplines in creative educational activities in order to update the creative potential of teachers, personal motivations, value orientations of teachers, constructive behavior in order to predict professional development (Soldatchenko, 2015) The objectives of this step. Show the role of education in the development of the creative potential of the individual. To consider the philosophical, psychological and pedagogical aspects of development of the creative potential of the teacher natural and geographical sciences; entity structure, the content of the concept; didactic features of development of the creative potential of the teacher. Develop a self-diagnosis and readiness of the teacher for creative educational activities at the existence of rules or regulations of knowledge (Samigullina *et al.*, 2015).

The second phase includes the definition of readiness of the teacher of geography and related disciplines to the implementation of inter-subject relationship and integration, the construction of the real field of solving professional problems. The objectives of the second phase. Show the psychological and pedagogical aspects of the integration of academic disciplines, the role of integration in the implementation of the competence-based approach, the development of creative potential of the participants in the educational

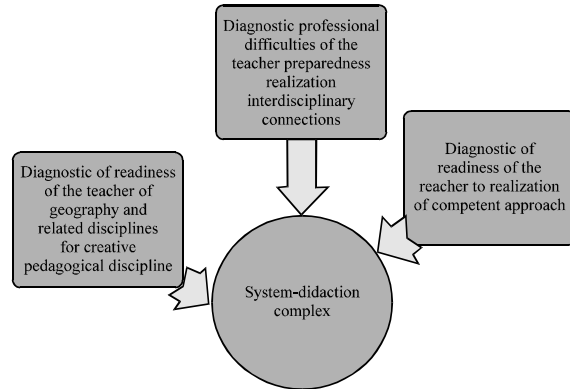


Fig. 2: System-didactic complex teacher training natural and geographical disciplines

process. To show the role of integration into the organization of educational process; didactic function integration. The role of integration into the organization of productive educational activity. The practical orientation of training of teachers of natural-geographical disciplines, first of all is the formation of a unified scientific view of the world (Samigullina *et al.*, 2015). Implementation of the Federal government standards of the "application of geographical (biological, etc.) knowledge in everyday life" is possible on the phenomenological concept metamethodic.

Metamethodic built on the ideas and principles of general scientific, methodological, philosophical character (Table 1). The third phase will integrate the first two stages and includes the determination of the degree of readiness of the teacher to realization of competent approach (Samigullina *et al.*, 2015). The objectives of the third stage. To improve the orientation-value, key and metasubject, structural, organizational-activity, communicative competence of the teacher. Generate analytical and evaluative competence of the teacher on personal experience and that of colleagues. Apply theoretical knowledge in solving practical problems, build skills to integrate theoretical knowledge from different blocks (subject, psychological, educational, cultural, etc.).

Integration of readiness of the teacher of natural geographical disciplines in creative teaching activities, the implementation of inter-subject relations and integration competency approach has been tested on the technologies of integrated tasks.

We share the view of Dvoryatkina (2012) the use of cyclic return to the previously studied material at a higher quality level. This achieves the possibility of "latent" knowledge, existing objectively but subjectively, not known to the student while there is a subconscious knowledge-cumulative effect.

Table 1: The main metamethodic ideas and principles

Ideas	Principles
Fundamental research: atomism, short-range, conservation of relativity, the cellular structure of living organisms; ideas about the origin and development of life on earth, man's interaction with the environment, global problems, etc. Methodology: the specificity of scientific knowledge, the stages of scientific knowledge, methods of scientific knowledge, forms of scientific knowledge, the specifics of the historically changing world pictures Philosophical: the material world, knowable world, the objective nature of scientific laws, forms of existence of matter, the indestructibility of matter and motion; notions of space and time, the origin of life on earth, the development of man and mankind, the role of the subject in the modern picture of the world, the nature and mechanisms of reflection	General scientific: systemic, planetary evolutionary  Philosophical: the material unity of the world, a universal relationship of all phenomena

The solution of integrated problems connected with productive activity-the transfer of the knowledge and methods of work in the new situation, the so-called "knowledge-transformation". Complex tasks are integrated original constructs that allow to model, generate creative thinking techniques, formulate hypotheses, to classify and standardize concepts include knowledge into new connections. Complex integrated tasks allow to personalize the process to open a teacher training reserves of self-creation.

The results of using system-didactic complex teacher training course and geographical disciplines including modules of creativity, the formation of a unified scientific view of the world (integration) and implementation of the activity, competence approach by means of integrated tasks are presented in monographs and international publications, materials of conferences of different levels (Samigullina, 2013, 2015; Samigullina *et al.*, 2015).

As a final third phase "Diagnosis readiness of the teacher to realization of the competence approach", the orientation-assessed values, analytical and evaluative, metasubject, structural, organizational-activity, communicative competence of the teacher.

Information on each level of assessment and the relevant indicators "going to" the method of system analysis of the results of complex integrated solutions of problems. It defines a single scale changes conditionally from 1-3 points. Nominal index is calculated by the equation:

$$J = \frac{3A+2B+1C}{N}$$

Where:

- N = The total number of teachers who took part in the experiment
- A = Number of teachers who have chosen the low level of integrated solutions of problems (3b.)
- B = Number of teachers who have chosen the average level of integrated solutions of problems (2b.)
- C = The number of teachers who chose a higher level of integrated solutions of problems (1b.)

## CONCLUSION

Innovative projects in the first place is not only to find a flexible system of teacher training course and geographic subjects but also allows you to adjust the model of vocational training of students (future teachers); get away from the narrow-subject and subject-knowledge-paradigm of teacher education; building a curriculum based on creative, transprofessional holistic orientation. Post-cycle step continuing education such forms of training as a scientific-methodological and scientific practical conferences, seminars, work Geography Teachers Association of the Republic of Tatarstan, interdisciplinary laboratory at the school.

## REFERENCES

- Dvoryatkina, S.N., 2012. The Development of a Probabilistic Way of Thinking in the Process of Teaching Mathematics: Theory and Practice: A Monograph. Infra-M, Tehran, Iran, Pages: 265.
- Kiryushina, O.N., 2013. Scientific and methodological support scientometric research resources of the scientific potential of the education system. Eur. Soc. Sci. J., 7: 59-70.
- Kovalevskaya, E.N., 2013. Organization of educational activities in the workshop as a condition for the development of professional culture of the teacher in the new educational environment. Bull. Tomsk State Pedagogical Univ., 2: 44-50.
- Samigullina, G.S., 2013. Development of Creative Potential of the Teacher of Natural Sciences in the Training. Kazan Publishing House, Kazan, Russia, Pages: 230.
- Samigullina, G.S., 2015. Remote Modules Teacher Training Course and Geographical Disciplines. The Fatherland Corporation, Kazan, Russia, Pages: 199.
- Samigullina, G.S., S.I. Gilmanchina, I.T. Gaisin, I.R. Gilmanshin and A.I. Rafailevna, 2015. Professional and creative development of natural geographic course teachers within the process of professional retraining. Int. Educ. Stud., 8: 159-165.
- Soldatchenko, A.L., 2015. Social polylogue as the organizational form of the method of social teaching. Pedagogical Sci., 14: 68-71.