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Research Activity in Teacher Training College

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Abstract

Problem: The research activity being as arranged in the educational process does not teach each student to arrange learning of discipline material and produce new knowledge without assistance.

Theoretical Background: 1. The activity approach (Vygotsky, Rubinstein, Leontiev, Galperin), 2. The systems approach (Z.A.Reshetova). These approaches orient students toward their own experience and purposely forming students' research knowledge and skills.

Systems analysis method is the primary method for the examination of the subject material as an object with the use of laws of system structure and a system-structure form of expression.

The research is performed in Noginsk Teacher Training College of Moscow Region, Russia. 104 final-year students of different specialities execute their Final Qualification Work during the two-semester period. They are divided in two groups: 42 students are supervised in experimental psycho-pedagogical conditions with the use of system analyses method, while 62 students are supervised in the traditional way.

The results of the experimental research activity in pre-service primary school teachers training:

1. The quality of the educational process increases.
2. The research activity becomes adaptive and accessible for each student without dependence on the individual abilities.
3. The students show interest to the technology of knowledge production.
4. New particular subject knowledge is easily produced by the students and applied in practice.
5. The students obtain the "ability to study" – to construct the research activity using the systems analysis method.

6. The method of research activity becomes a "systems way of students' thinking"/
7. The systems analysis method itself acts as a generalized method of research activity that may be used in studying of different subjects.
8. During the educational process students feel psychological comfort.

Keywords: activity approach, systems approach, systems analysis method

At present, education in the Russian Federation is in the process of replacement of the paradigm: the "knowledge"-paradigm is being replaced by the "activity"-paradigm.

The main goal of education, as declared in the official programme documents, is student's personality development based on assimilation of universal methods of activities.

Among these universal methods is research activity for new knowledge discovery, knowledge digestion and practical applying.

Professional activities of modern specialists require research skills and creative abilities.

Unfortunately, educational institutions in our country are not quite oriented towards forming of research skills and abilities in the training process.

Problem

Research activity as arranged in the educational process does not teach each student to arrange studying of an educational discipline material and discover new knowledge without assistance.

The aim of the study is to find out psycho-pedagogical conditions of students research activity.

Theoretical background of the study

1. **activity approach** (L.S. Vygotsky, S.L. Rubinshtein, P.Ya. Galperin, A.N. Leontiev, etc.)
2. **systems approach** (Z.A.Reshetova)

These approaches orient students towards their own experience and purposefully forming students' research knowledge and skills.

Activity approach

- activity of the student is an object of controlling and purposeful forming in the educational process.
- discovery of new knowledge should be conducted by the student through *research activity* (not empirically or by trial-and-error).
- when a student is a research activity subject, then he is in process of self-education.
- student's internal needs, standards, abilities change in the following results…

- the results: the new self-determination in the sphere of investigation, the new standards and methods of existing and functioning of the investigated object, receiving of a new content the relevant methods of knowledge, etc.

Systems approach

- It is considered to be a universal method of objects research: systems, structures, processes.
- It rejects one-sided, analytical, linear-casual methods of investigation.
- It studies integrative properties of the object, its origin and development.
- Systems analysis method is the primary method of investigation, the general scientific method of investigation performing methodological function.

Systems analysis method (main characters and procedures)

The systematic object structure is under analysis:

- The levels of its structure and functioning are highlighted;
- The analysis of structures of each level and inter-level relations is conducted;
- The object is investigated in its external and internal relations integrity;
- The genetic basis of various forms of system existence is discovered – the integrity of steady and variable in the object;
- The object is investigated from the point of view of its origin, functioning and development.
- The subject of study being examined as an object is discovered by the student not through "laws of units combination", but through laws of system structure.
- The knowledge about the object acquires a system-structure form of expression.

Knowledge characteristics

Characteristic features of any new knowledge produced by a student in the research activity arranged under systems analysis method differ from the features of traditional knowledge:

1. Such knowledge acts in *orientation function* towards the tasks to be resolved in the particular subject sphere.
2. Orientation knowledge is highly generalized on the basis of not empirical but theoretical principles.
3. *Students' awareness* of the knowledge (see "Indicators of students awareness").

4. Knowledge *completeness*, the degree of which is determined by the system of knowledge on the object under research.

5. Knowledge represents defined conceptual *system*.

The system of knowledge is described by theoretical scheme of the systems analysis. Each element of knowledge obtains its functional meaning only in the system, in connection with other elements.

Indicators of students awareness

- The new knowledge is a result of learning activity as an objective process; it is not given to the students in the form of generalized rules.
- It is expressed not only by particular subject concepts, but also by categories of activity and systems analysis.
- This knowledge gives an opportunity to apply it in any situation, providing successful resolving of different tasks.

Products of research activity

1. *Subject* knowledge and skills
2. *Methodological* knowledge and skills:

- how to arrange investigation of the examined object;
- how to summarize any produced scientific knowledge;
- how to schematize it using particular subject signs and symbols.

Research activity is described by three **conceptual instruments:**

a) the language of system concepts;

b) the language of activity categories;

c) the language of concepts of particular subject.

Successfulness of any activity is determined by its **orientation basis**.

In purpose to form the orientation basis it is necessary:

- to construct orientation basis as a scheme in materialized form.
- to arrange the process of its interiorization by resolving of various research tasks.

The training process is constructed by **2 stages of students activity**:

Stage 1: A teacher arranges joint research activity with the students on one particular subject theme.

Stage 2: The students construct the research activity on the particular subject material on the other theme, interiorizing the content of the orientation scheme.

The design of the pedagogical experiment

The experiment was performed in Noginsk Teacher Training College of Moscow Region, Russia. 104 final-year students of different departments are involved into the experiment. Among them future teachers of the following pedagogical specialities:

Group	Speciality	Number of students	Total
Experimental Group	Primary Education	**22**	**42**
	Pre-School Education	**20**	
Control Group	Physical Training	**20**	**62**
	Mathematics	**22**	
	The Russian Language	**20**	

Final Qualification Works were executed during the two-semester period by 104 students.

Group	**Control Group**	**Experimental Group**
Total number of students – 104	62 students	42 students
Specialities	• Physical Training • Mathematics • The Russian Language	• Primary Education • Pre-School Education
The type of supervision	Traditional	In experimental psycho-pedagogical conditions with the use of system analyses method

Key Performance Indicators of Final Qualification Work:

1. Title page design
2. Structure
3. Formulations of methodological categories
4. Registration of the bibliography
5. Performance of the instruction requirements

Before the final uphold all the Final Qualification Works were tested.

The number and percentage of the Final Qualification Works that contain mistakes (errors and defects) were measured and compared.

The results

	Control Group		***Experimental Group***	
Key Performance Indicators	***Number of mistakes***	***Percentage***	***Number of mistakes***	***Percentage***
Title page design	**44**	**71%**	**10**	**24%**
Structure	**14**	**23%**	**7**	**17%**
Formulations of methodological categories	**23**	**37%**	**5**	**12%**
Registration of the bibliography	**62**	**100%**	**11**	**27%**
Performance of the instruction requirements	**38**	**62%**	**5**	**12%**

Conclusions

1. The quality of the educational process increases.
2. The research activity becomes adaptive and accessible for each student without dependence on the individual abilities.
3. The students show interest to the technology of knowledge production.
4. New subject knowledge is easily produced by the students and applied in practice.
5. The students obtain the "ability to study" – to construct the research activity using the systems analysis method.
6. The method of research activity becomes a "systems way of students' thinking".
7. The systems analysis method itself acts as a generalized method of research activity that may be used in studying of different subjects.
8. During the educational process students feel psychological comfort.

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