

Systematic case study in the context of the future specialists' professional competence development

Estudio sistemático de caso en el contexto del desarrollo de competencias profesionales de los futuros especialistas

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ABSTRACT:

The article is devoted to the systematic case study in the context of the higher education institutions students' professional competence development. Herewith, the students do not only master the systematic knowledge, skills and abilities but also learn to apply them in initial and modified situations according to various influencing factors. Systematic knowledge, thinking skills and abilities, the approach to achieving goals and education objectives, and satisfaction are the significant aspects of this kind of learning. In the process of a broad study, the students identify various professional problems and cases and find ways to solve them, applying the systematic approach.

Keywords: Systematic approach, individual case, professional case systematic studying, types of work and actions, systematic and other ways of thinking, problems

RESUMEN:

El artículo está dedicado al estudio de caso sistemático en el contexto del desarrollo de competencias profesionales de los estudiantes de instituciones de educación superior. Con esto, los estudiantes no solo dominan el conocimiento, las habilidades y las habilidades sistemáticas, sino que también aprenden a aplicarlas en situaciones iniciales y modificadas de acuerdo con diversos factores de influencia. El conocimiento sistemático, las destrezas y habilidades de pensamiento, el enfoque para alcanzar las metas y los objetivos educativos, y la satisfacción son los aspectos significativos de este tipo de aprendizaje. En el proceso de un estudio amplio, los estudiantes identifican varios problemas y casos profesionales y encuentran maneras de resolverlos, aplicando el enfoque sistemático.

Palabras clave: enfoque sistemático, caso individual, estudio profesional de caso profesional, tipos de trabajo y acciones, pensamiento sistemático y otras formas de pensar, problemas.

1. Introduction

Case analysis, being a form of an active learning method, is an effective means of attaining

expertise and competence development.

Herewith, the systematic approach is not implemented adequately into the existing means of educational and professional case studying. The problem is caused as a result of systematic thinking development not being involved in the higher education learning process.

Systematic knowledge and thinking skills development envisages the corresponding systematic approach methods, although their implementation in the theory and practice of the expertise and professional competence development is rather narrow.

According to our survey, the developed Systematic Case Study Research allows for holistic comprehension of the situations (cases), resulting in better-grounded actions and conclusions. In addition, while studying and applying this method, the students master various types of work and actions, and systematic thinking skills and abilities, which can prove to be useful in their future profession.

2. Systematic case study research and its implementation in the educational process

The authors define the Systematic Case Study Research as the practical implementation of the systematic approach in the individual case studying process, promoting the formation of skills and abilities of the systematic, analytical, investigatory and other ways of thinking and also accumulation of experience in identifying, studying and solving various professional problems.

The systematic knowledge of the current and future objects of the environment, as well as various problem situations, connected directly or indirectly to the object of the survey (including the ones influencing their state and behavior), acquires the systematic analysis of the information.

System structuring and studying method and the short-cut presentation of the information are meaningful and contribute to the Systematic Case Study Research development (SCSR) (Abdyrov et al., 2018).

The authors interpret Systematic Case Study Research and individual case analysis as an active learning imitation method. D.V. Chernilevsky declares that imitation technologies are based on imitation or imitation and gaming modeling, which means more or less adequate professional activity presentation within the education process (Chernilevsky, 2002).

Active and problematic learning methods, including individual case analyses, provide the future specialists with effective expertise and competency development. These methods contribute to the development of the students' professional, analytical, and other means of thinking, more justifiable individual or collaborative solutions, creativity, etc. (Barnes et al., 1994).

Various professional case analyses have proved the effectiveness of Systematic Case Study Research. The Systematic Case Study Research mobilizes creativity, contributing to systematic thinking skills and abilities development, individual analysis expertise, the solution of cases and problem situations of all kinds, decision-making, etc.

One of the compulsory conditions for the Systematic Case Study Research implementation in the learning process and individual work is introduction of students to educational and scientific literature, devoted to applying the systematic approach and development of systematic thinking skills with students and specialists (Lapygin, 2008).

Figure 1 shows the general scheme (pattern) of the Systematic Case Study Research, where:

(1) – The Systematic (professional) Case Study goal (goals).

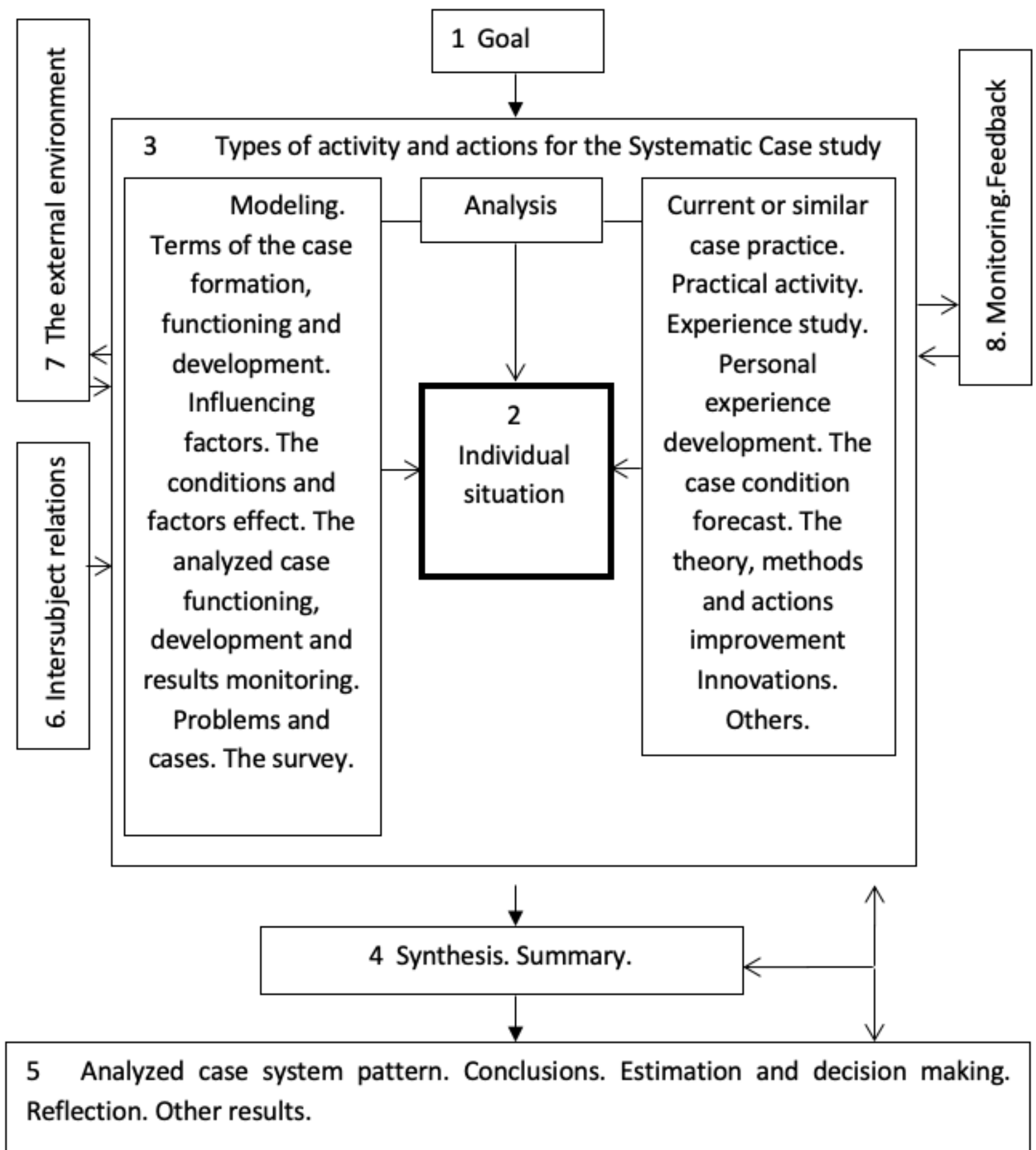
(2) – The individual situation that requires studying. The so-called "bank" of learning, problem, educational, production, management and other kinds of situations is organized to be applied in the learning process.

(3) - Various types of work and actions, contributing to the holistic learning of the initial or modified individual or other (professional) cases. Such as:

1. The expanded analysis of the case and respective educational, scientific and other information, the versatile case studying results of the students' activity, the basic definitions and normative legal acts analysis, etc. The case analysis envisages its content and structure components identification and study, followed by its invariant components ("the core") determination and the identified information synthesis.
2. Modeling of cases, objects, problems, etc., simulation of students' activity and action under various conditions and situation development.
3. Studying and registration of the initial and modified terms of case existence, functioning, development and formation, as well as the students' activity and actions in various situations.
4. Studying and registration of the influencing factors (internal and external, objective and subjective, direct and indirect, positive and negative ones).
5. Studying and registration of the factors and conditions influence and impact on the analyzed case, its functioning and development results, current or expected problems and decision-making effect.
6. The monitoring of the analyzed case as well as its functioning, development and result; the monitoring of the process and its effect, as well as the state of the students; the monitoring of the environment external to the case.
7. Identification, systematization and solution of the problems caused by the analyzed situation or connected with its studying; the revealed results implementation; social, economic, ecological, production and other kinds of the problems and cases identification, studying and registration.
8. Studying of the case and other issues and problems pertaining to it.

Figure 1

Educational and actual Systematic Cases Study pattern in the process of the students' expertise and professional competence development.



9. The similar cases practice studying, the students' systematic (theoretical and practical) studying of the individual professional case; learning goals and tasks directed activity; training and professional tasks and problems studying and solution; another activity.

10. The similar cases study and solution experience analysis; personal experience of the systematic approach to the Systematic Case Study Research; the analytical, research, practical, forecasting and other activities development, the revealed results summarizing, decision making.

11. Personal experience development and implementation in the process of professional case systematic studying.

12. The case state, its function and development result, decision making effect and education results forecast; hypothesis formation, etc.

13. Theory, methodology, means, methods, case studying and treatment improvement; the subjects' activity, collaboration and behavior in the given situation advancement, etc.

14. Innovative activity in the theory and practice of the Systematic Case Study Research

(4) – The authors consider the student’s synthetic thinking being a product of synthesis, as well as systematic thinking component and the creativity basis.

(4) – Summarizing, that contributes to the integral content of the analyzed information and system.

(5) – The accepted conceptual pattern of the educational information system. Residual knowledge test results (annually, as well as testing graduates) showed the retention of the model learning.

At the department of the vocational education of Kazakh Agro Technical University the professional case bank, which was partially replenished by the students after they had completed the internship practice, was founded. The implementation of Systematic Case Study Research results, as well as the management recommendations, is revealed in the students’ internship reports.

The authors consider the conclusions, case evaluation, and decision making (presented by the students in written form) to be the components of the Systematic Case Study Research. The reflection can prove to be a significant part of this initiative and the professional competence development.

(6) – Intersubjective relations ensure the quality, consistency and effectiveness of the Case Study Research. The appropriate implementation of the intersubjective relations in the studying process was monitored by the teacher and was controlled by the individual students.

(7) – External environment correlation with the designed systems (i.e. individual case system), is of particular importance for their “dynamic” state systematic studying and the integral knowledge of the consistent thinking and the environment development.

(8) – Monitoring of the Systematic Case Study Research and its results, the state of the participants of the educational process estimation and their professional expertise and competence development; acceptance of the presented activity and means of thinking caused by it.

Feedback allows for the professional competence development rate monitoring and evaluation, the appropriate decision making and the subjects’ learning activity adaptation. It is a significant factor, influencing the quality and effectiveness of education, and is considered to be essential for the future specialists’ training.

An important condition for the case study and its further functioning on the basis of the systematic approach is the case treatment as an information system component.

During the study process, the case was analyzed twice, first focusing on the initial terms, and thereafter introducing the modified terms, considering influencing factors and anticipated problems. Such terms, factors, and problems were accepted either on the basis of the possible case development forecast, or in accordance with the teacher’s instructions.

An obligatory condition for the Systematic Case Study Research implementation was mastering of various activity types, included in the learning process (Fig. 1), that prompted development of the appropriate types of thinking.

For instance, the analytical activity (i.e. the analysis, the conditions assessment, modeling, etc.) contributes to the analytical thinking skills and abilities development, whereas the research activity envisages the research thinking evolution. The Systematic Case Study Research is conducive for the studying skills and abilities, theoretical, practical, and other kinds of human activity development, which is considered to be an indirect and summarized reflection of the environment (Abdyrov et al., 2018).

A variety of activities were applied in this hard task solution, as indicated in Fig. 1, namely:

1. The case analysis, its components identification and studying in the initial (specified) and modified conditions;
2. Synthesis and summary of the identified case information;
3. Case modeling;

4. Case initial (specified) state's studying in accordance with the current factors and problems influence;
5. The case conceptual system modeling in its initial (specified) state;
6. The consequences of the case functioning identification and forecast;
7. The terms of the case functioning and development modification in accordance with the influencing factors and problems (identified and expected);
8. Versatile studying of the case development in the modified conditions with regard to the influencing factors and expected problems;
9. The case development forecast with regard to the influencing factors and possible problems;
10. New cases state modeling;
11. The case conceptual pattern development;
12. The conclusions and management decision-making;

In this context we may declare the possibility for the integrated systematic case study, the goals effective achievement and the educational tasks fulfillment, the necessary activity and corresponding (including systematic) methods of thinking mastering.

The above mentioned actions and procedures were devoted to three specific students' competences and expertise development. Namely:

- 1) Case study, problem and tasks solution, applying the mastered knowledge, skills and competences, in accordance with the "educational standard";
- 2) Case study, problem and tasks solution, applying the mastered knowledge, skills and competences on a creative level;
- 3) Case study, problem and tasks solution, applying the mastered knowledge, skills and competences on the research level.

During the educational process the evaluation of the Systematic Case Study Research experience and skills, as well as the systematic and other topical methods of thinking development, took place.

Certification cards with theoretical questions, tests, tasks and cases of three levels of difficulty and complexity (high, medium and low) were used for the organization, monitoring and evaluation of the case analysis process and results.

As the experiments showed, the Systematic Case Study Research completes and develops the well-known case-method, which was used in the educational process along side with the Systematic Case Studying.

In the educational process the implementation of the given methods was made on the basis of the common case. In this context the training case creation took quite a lot of time, as well as systematic case studying needed just a case. In addition, the case-method often provides the case analysis in the specified period of time, without taking into account the dynamics and the expected results.

The definition of "case" is introduced in the context of the case-method implementation. "Case" – is a real situation or activity aspect description, which makes the students participate in the case discussion, analysis and decision making.

I.V. Gladkih declares that training case is a definition of some situation, which presents a set of events, connected by some situation. Besides, the situation can be studied as a complex collaboration of various factors, which either contribute to the conflict solution, or hinder it. The studied situation has a time definition that fixes a certain position in the continuous process of changes (Gladkikh, 2010).

A. Dolgorukov considers the case-method as (Dolgorukov, 2012):

- 1) A specific type of the research analytical technology;
- 2) A cooperative education technology;
- 3) A synergistic technology;

- 4) The developing education technologies integration;
- 5) A specific kind of a project technology;
- 6) The concentration of the significant achievements of the "making success" technology.

At the same time, the case method, in contrast to the Systematic Case Study Research does not provide either any kind of holistic analysis of the situation or any certain validity of the management decisions making.

During the discussion of the selected cases study results, the students were tested and surveyed to make a comparative assessment of the effectiveness, labor intensity and efficiency of the presented methods of the expertise and competences development.

3. Research results

The practice of the professional competence development has revealed the important conditions for the Systematic Case Study Research implementation in the educational process, including the necessity of:

1. The systematic approach implementation in the educational process and the students' activity;
2. Theoretical, methodological and methodical foundations for the expertise and professional competence development and creation, based on a systematic approach and professional Case Systematic Studying;
3. The compulsory mastering of the presented kinds of work and actions as well as the corresponding skills and abilities development;
4. The formation of the systematic skills and other (justified by the types of work and actions, presented in the given survey) means of thinking;
5. Quick and effective implementation of the intersubject relations;
6. The development of the skills and abilities of the objects (including the individual cases) studying in their initial (specified) and modified states, according to the influencing factors as well as current and expected problems. In the last situation the student has to learn watching, understanding and implementation of the information about the analyzed object in real conditions (the external environment conditions);
7. The foundation, replenishment and active usage of the students' self-study and the so-called "bank" of educational and professional cases in the educational process. It is advisable to use the internship practice for the professional case identification, collection and description;
8. The context learning implementation;
9. Applying the mastered (basic) knowledge, skills and competences for the professional problems solution not only in accordance with the "educational standard" (meaning the knowledge, skills and abilities that correspond to the educational standard), but also on the creative and research level;

The research showed that the Systematic Case Study (on the base of the systematic approach) contributes to:

1. The holistic knowledge of the studied situation in accordance with its current and expected (future) states;
2. The development of the ability to collapse (compress) and expand the studied information, to transfer the accepted knowledge (received information) and skills to other situations, spheres of knowledge and activities;
3. New knowledge production;
4. Systematic approach implementation in the cognitive, theoretical, and other current and future activity ;
5. Analyzing objects in their static and dynamic states (according to their correlation with the external environment);

6. Various activities (actions), that contribute (ensure) the effective goals achievement, tasks and problems solution, as well as the appropriate ways of thinking development;
7. Justified circumstances for management decisions making;
8. The students and specialists' systematic ideas, as well as systematic, creative and innovative thinking skills and abilities development;
9. The students' fundamental and systematic knowledge formation and development;
10. Self-management skills development in cognitive, scientific, and other types of activity;
11. Specified information about the examined object detection for the subsequent modeling of its system;
12. The case study objectivity increase and the subjective component in this process minimizing;

A comparative analysis of the traditional case-method and the innovative individual case method revealed the following:

1. The time of studying and the problem situation solving, using these methods, was almost the same, but the Systematic Case Study Research made it possible to implement the versatile consideration strategy. This contributed to holistic comprehension of the situation;
 2. The case-method does not provide a purposeful case modeling, whereas in the process of its systematic study all the students of the experimental groups coped with this task successfully;
 3. In the process of studying and solving various problems, students get acquainted and gradually mastered the suggested kinds of work and actions (shown in Fig. 1) and developed the appropriate ways of thinking. In this case, they obtained personal means of effective goals achievement and the tasks, set by the current and future professional activity, solving;
 4. The Systematic Case Study Research in contrast to the case-method, contributes to the development of the systematic knowledge, thinking and approach skills and abilities in cognitive and other kinds of activities;
 5. A significant effect of the Systematic Case Study Research implementation, as compared with the case-method, consists in the sustainable, controlled and effective development of the synthetic thinking as the basis of a human's creative abilities;
 6. The systematic thinking skills and abilities formation contributes actively to the students' intellectual abilities development, since the same mental operations of the analysis, synthesis, summarizing, concretization, etc., create the systematic approach and intellectual development base;
 7. The Systematic Case Study Research is supplemented by the case-method and contributes to its creative development.
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4. Conclusions

1. From the systematic approach point of view, a specific professional task can be considered either as a phenomenon or as a process. In the first case, the composition, structure and other characteristics of the situation are revealed. In the second case, the situation is studied as a process.
2. In the process of Systematic Case Study Research the relevant information is regarded as the subject of studying. Being an integrated object of the environment, the studied situation can prove to be a specific information system. An important stage of the situation holistic research and treatment is its super-system and the external environment identification and study.
3. The studied professional situation system modeling allows us to consider it as a means for various theoretical and practical tasks and professional problems solving.
4. The effectiveness of the professional expertise and competence development increases significantly if a systematic study of the situation as a problem is carried out, resulting in the decision making.

5. The individual professional case study skills and abilities should be supplemented by decision-making skills and their practical implementation plan development with possible effect forecast and evaluation.
 6. The approximate basis of the future professional activity should be performed as a combination of "core" (basic knowledge, skills and abilities, as well as the ability and willingness to use them in the professional activity) and correspondent goals for the specific work and actions implementation. This circumstance, to a certain extent, reflects the so-called functional thinking of the future specialist.
 7. The systematic thinking skills and abilities formation contributes effectively to the students' intellectual and creative abilities development.
 8. The Systematic Case Study Research presented in the given work allows us to develop the currently existing case-method.
 9. The system ideas, the systematic and other relevant ways of thinking skills and abilities, formed in the process of professional case studying and treatment, are considered to be the means and factors of the professional competence development.
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