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A Structural and Functional Model for Forming Management Skills in Junior Schoolchildren

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ABSTRACT

The purpose of the study is to analyze theoretically and simulate the formation of management skills in junior schoolchildren. The authors classified junior schoolchildren's management skills, defined psychological and pedagogical principles of their formation. Empirically obtained results of questionnaires for teachers and parents (n=550) determined how well they understood the importance and relevance of forming management skills at primary school. In order to examine the organization of the pedagogical process at schools the pedagogical documents were analyzed. Obtained data were used to develop indices and criteria of formed management skills, as well as a structural and functional scheme of forming management skills in junior schoolchildren. The suggested model of the content of learning-activity management preserves the substantial distinctness of management actions and operations and creates possibilities for comprehending the structure of learning-activity management to apply knowledge thereof consciously when organizing the educational process in elementary schools.

KEYWORDS
learning skills; management skills; personality-oriented education; cognitive competence; self-regulated learning; personality-oriented education; model of forming junior schoolchildren's management skills.

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Introduction

The formation of schoolchildren's management skills at educational institutions is an integral component of the process of children's socialization (Jones, 2004). This issue is of key importance under the conditions of rapidly changing social and economic relations in society (Moeed, 2013). In addition, the development of management skills of students becomes one of the principles of the modern personality-oriented education (Estes, 2004). Therefore, there is a need to develop an effective model of forming junior schoolchildren's management skills as the basis of their future learning and cognitive activity.

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It is worth noting that the coordination of actions for laying the foundation for learning and cognitive competence is important in elementary schools (Schonert-Reichl, 2015). Therefore, the key competencies for junior schoolchildren are as follows:

- Management (the ability to solve problems).
- Informational (the ability to engage in cognitive activity independently or the skills of continuous learning).
- Personal (the ability of self-organization, self-improvement, life and professional self-identification, self-fulfillment, tolerance).

We adhere to the definition of management skills as a set of interdependent life-purpose orientations and abilities that provide an opportunity to formulate correctly, implement effectively the goals, and require a certain level of coordination of human resources (Rue, Byars & Ibrahim, 2012).

When examining areas for improving the content of education, I. Lerner (2001), an author of the cultural concept of education content, notes that the main task is to make it so that the list of general learning skills is considered and provided for in the main clauses, depending on students' age, in programs, textbooks, and the actual learning process. Moreover, learning skills ought to arm pupils with the ability and readiness for self-organization and realization of their possibilities and self-regulation (Skibbe, 2011).

In this regard, some scholars emphasize the cognitive nature of learning activity and believe that its organizational and psychological structure includes motivation; a problem (a learning situation or learning objective in the form of a problem); execution (implementation in the form of learning actions); regulation and assessment, which become self-regulation and self-assessment (Shiyanov & Kotova, 1999).

As a part of contemporary pedagogical theories the ideas of pedagogical support for pupils' self-regulated cognitive activity as part of the constructivist pedagogy are developed: self-regulation is studied as a crucial condition for organizing "continuous education", conditions of young people's self-regulated learning are analyzed, possible ways to support it by changing the content, methods, organizational forms, logic, and the structure of schoolchildren actions are investigated.

It is worthwhile noting that one of the crucial periods when the fundamental development basis of values and management skills are laid, is the age interval from 8 to 12 years (Alexander, 2010). However, educational programs of elementary school often do not take into account the peculiarities of cognitive development of schoolchildren, and do not always aimed at the formation of any management skills.

We agree with the scientists, who claim that the low level of digestion of such skills in school is a result of traditional education being focused on the perception of ready-made knowledge (Stroud, 2015).Thus, the principle of so-called problem-based learning is becoming more common. In this case, educational system involves changes in traditional subjects studying technologies, the development

of collective creative work and group work, as well as the practical learning of goal setting techniques (Reynolds, 2013).

Special attention is given to students of the primary school, as far as this period is characterized by a high level of perception of the facts of reality and sensitivity to the conditions of the psychological microclimate in the academic environment (Roeser, Midgley & Urdan, 1996).

In addition, the trend of introducing business schools in classical secondary schools is becoming more widespread (Bennis & O'Toole, 2005). This can be explained by the fact that in the present-day period of active public transformations it is vital for schoolchildren to learn responding to the important social and economic changes and demonstrating organizational skills in the course of learning process and during leisure time (Sajko, 1986).

The principles of development of Kazakhstan education system are determined by the State Program of Education Development in the Republic of Kazakhstan for 2011- 2020 and the National Action Plan on Development of Functional Literacy of School Students for 2012-2016. As proposed components of development of management skills following are chosen:

- knowledge that reveals the essence of management to the child, as well as its manifestations, meaning for human activity, and knowledge of rational organization and management of one's activity;
- skills of assessing activity from the perspective of management, abilities and habits of rational organization and management of the learning activity;
- unacceptance of time wasting (State program for the development of education in the Republic of Kazakhstan for 2011-2020, 2010; National plan of actions for developing schoolchildren's functional literacy for 2012-2016, 2012).

However, the results of empirical studies of intraschool management and the level of formation of cognitive independence of junior schoolchildren testify that there is a large number of unorganized pupils with poor performance, who enter secondary schools of the Republic of Kazakhstan. Thus, not much attention is being paid to the role of schoolchildren's management skills, which, besides organizational skills, also include skills of goal setting and motivation.

The preferable result of learning can be regarded as the achievement of such a level of junior children learning and cognitive activity, when they are capable of independently selecting cognitive problems to be sorted out, formulating goals to solve said difficulties, finding adequate means of their realization, controlling and assessing their efforts, the process and results of their activity (Garner, 1990). Therefore, we examine junior schoolchildren's mastering of skills of managing their learning activity as a required minimum.

According to the logic of the scientific and pedagogical phenomenon, changes over time in management skills reflect the development of pupils' independence as they learn, i.e. the development of independence is a transition from the system of external management to self-management (Lorig & Holman, 2003). It is obvious that during learning, the function of knowledge transfer by the teacher should

gradually reduce, while the role of pupils' independence should increase respectively (Flanders, 1960).

Considering the above, the formation of schoolchildren's management skills is a purposeful creation of conditions for personal development in the context of the activity and learner-centered approach. Profound mastery of skills of managing learning activity largely determines the success of learning at later stages of continuous education. In this context, the problem of forming management skills, which are the basis of the generalized way of organizing schoolchildren's activity and its management by children themselves, becomes especially relevant.

Aim of the Study

Thus, the purpose of the study is to determine the indicators and levels of formation of junior schoolchildren's management skills, with a view to constructing a structural and functional model of these skills

Research questions

The research questions were as follows:

What is the level of understanding by teachers and parents of the importance and necessity of forming schoolchildren's management skills?

What are the actual capabilities of modern syllabi of subjects and textbooks for junior schoolchildren?

Which changes in the current system of elementary education should be carried out?

Method

The theoretical research was executed during the first stage in order to examine the goal of forming junior schoolchildren's management skills.

In order to determine the understanding by teachers and parents of the importance and necessity of forming schoolchildren's management skills, as well as their readiness to upgrade their skills in this field, the written questionnaire instrument was used (Table 1).

Table 1. Questions from questionnaires for teachers and parents

№	Questions
1	Define the concept of "junior schoolchildren's management skills"
2	Is it necessary to form management skills in junior schoolchildren?
3	What is the role of management skills in schoolchildren's learning and cognitive activity?
4	Is the problem of forming junior schoolchildren's management skills relevant in your school?
5	What methods, means, and techniques of forming management skills in schoolchildren do you know?
6	Do you require additional education to form management skills in junior schoolchildren?

The authors adhered to the rules of compiling questionnaires: the questions were thoroughly composed, as specific as possible, correct, and comprehensible,

did not contain hidden hints as to the desired answer, but at the same time were mutually testable. Quantitative data, obtained from the questionnaire, would then be supplemented by qualitative analysis.

The study took place on the basis of 1, 3, 5, 8, 9, 10, 12, 13, 14, and 22 secondary schools of Aktobe (Aktobe Region, Kazakhstan) in 2014-2015. The number of respondents amounted 550 people, among them – 450 parents and 100 teachers. The sample was drawn using stratometric.

The analysis of pedagogical (school) documents provides objective data on the organization of the pedagogical process at schools. This method was used to determine the correspondence of the content of syllabi and school documents with the studied problem of forming junior schoolchildren's management skills.

The final phase provided the usage of the modelling methods consisted in constructing the scheme of the formation of management skills of junior schoolchildren and investigating its properties.

Data, Analysis, and Results

The survey of the teachers during the experiment showed an insufficient level of theoretical and methodological education for regulatory skills development in junior schoolchildren. The same tendency was detected after summarizing parents' answers (Figure 1).

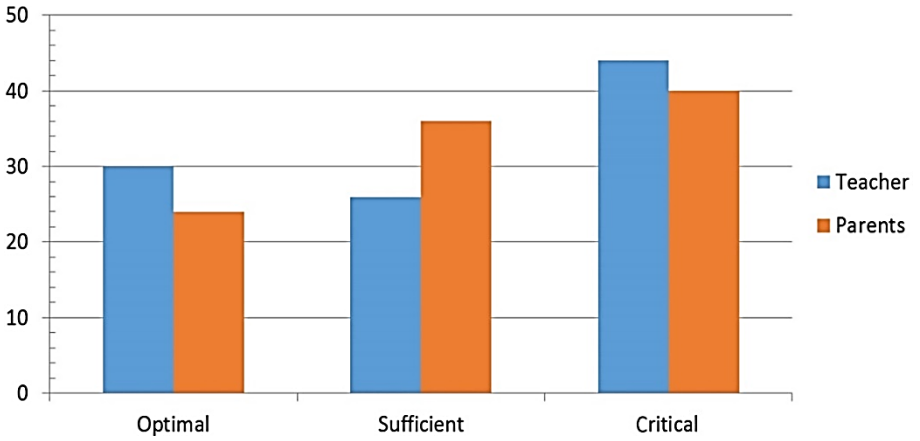

Figure 1. Awareness of the problem of forming management skills in junior schoolchildren

The research also revealed the inconsistencies between the willingness to work on forming management skills and the lack of knowledge regarding the possibilities in this area. Thus, the most teachers and parents are ready to form management skills in junior schoolchildren, which was confirmed by their willingness to receive qualified help from specialists (Figure 2).

The obtained results may relate to the poor attention to the development of management skills in instructional materials and methodical developments of the learning process organization. Therefore, we analyzed the actual capabilities of modern syllabi of subjects and textbooks. The analysis of tasks in new-generation mathematics, Russian language and literature textbooks shows that various tasks

are intended primarily to develop only several management skills at the level of executive actions.

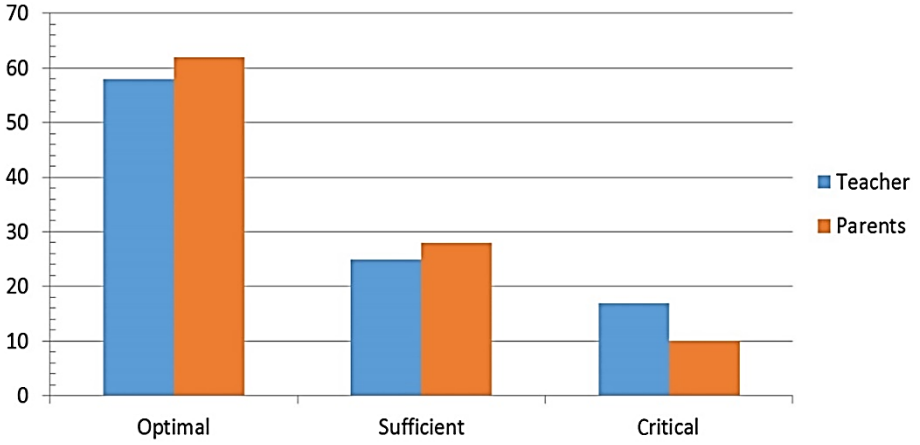

Figure 2. Awareness of the need to upgrade their skills in this field

For example, the syllabus for "Mathematics" for 1-4 grades of comprehensive schools, approved by the decree of the Ministry of Education and Science of the Republic of Kazakhstan No. 115 dated April 3, 2013, defines the tasks of the subject as follows:

- to develop functional qualities of the child's personality, such as attention, perception, memory, thinking, oral and written, including mathematical, speech, psychomotor system, eye-mindedness, and logical thinking;
- to form the learning and cognitive activity of junior schoolchildren: the ability to plan and act according to plan, including intellectual actions (analysis, synthesis, analogy, generalization, abstraction, modelling, etc.), and abilities of self-regulation and self-assessment.

This syllabus also lists the requirements to the level of 1st-grade pupils' training. For example, in terms of the problem studied in this research, the following requirements are of interest:

"1) to work with textbooks, to understand the meaning of figures and charts, exercises and requirements, presented therein;

2) to maintain a certain position during class, to hold the pen or pencil properly;

3) to manage one's behavior;

4) to check if the tasks are performed and problems are solved correctly".

The following are the requirements to 4th-grade pupils: "After the 4th grade, students shall be able:

1. to plan and act according to plan;
2. to perform self-regulation and self-assessment;
3. to analyze their activity".

The syllabus for the Russian language, developed in accordance with the State Compulsory Educational Standard, approved by the Government of the Republic of Kazakhstan decree No. 1080 dated August 23, 2012, notes:

"For the 2nd grade: general learning skills, aimed at systematic-activity results of education – learning-organizational: participation in determining the topic and goal of the lesson, adequate understanding of the set learning task, the

ability to perform consecutive actions to solve the task; the ability of self-regulation (what I know, what I can), assessment of one's activity.

For the 3rd grade: general learning skills, aimed at systematic-activity results of education – learning-organizational – participation in goal setting, planning, and self-assessment; the ability to find ways to solve set tasks, the ability to ask questions.

For the 4th grade: learning-organizational – goal setting, planning, and self-assessment, the ability to find ways to solve set tasks, regulate the course and result of activity".

Can note the methodological basis of the syllabus is the system of learner-centered education, which corresponds with the child's individual development, his or her potential capabilities of acquiring knowledge, forming functional literacy, with which knowledge, acquired during reading classes, are used by the learner in various real-life situations. According to this methodology, each pupil is an individual, an active subject of the educational space, with his or her own peculiarities and axiological attitude to the world; with the activity approach, the pupil acquires knowledge during learning activity, aimed at obtaining concrete results of learning – subject-specific knowledge, a system of value orientations, general learning skills and the ability to analyze, synthesize, generalize, and act productively and creatively.

Requirements to the training level of 4th-graders: Pupils shall be able to apply learning-organizational skills, formulate the topic and task of the lesson, assess their learning activity at the end of the lesson, and participate in search discussions and the solution of set tasks.

Obtained data allow developing a structural and functional model of forming management skills in junior schoolchildren.

The modeled content of the formation of management skills in junior schoolchildren is based on the following psychological and pedagogical principles:

1. Learning activity management will be considered a concrete type of human activity.
2. The structural components of learning-activity management perform different functions.
3. Actions that manage junior schoolchildren's learning activity include a set of singular, in terms of form, operations: orientation, planning, execution, control. The technological structure of the model of junior schoolchildren's learning activity management has three blocks: entry – the beginning of a schoolchild's management of his or her learning activity; the modular block that consists of five consecutive and isolated modules – actions with a common structure (operations of orientation, planning, executing, and control), but with different content; exit – the end of a schoolchild's management of his or her learning activity.

The first action of learning-activity management (management skills) for junior schoolchildren is the determination of the learning activity goal. The next process, which is subject to a conscious goal, is the planning of activity execution. The blocks of the structural and functional model are consecutively connected; the arrows reflect the strict directionality of this process. Consecutively directed arrows also connect modules – actions from the management block, action operations, which indicates a consecutive execution of actions to the operation

during schoolchildren's management of their learning activity. The linear structure of the management content reflects the list of management actions, the structure and sequence of its constituent operations. At the same time, the arrows also model the functional interaction between the activity and its elements: the beginning and end of the learning-activity management perform the function of motivating the subject; the management actions perform the guiding functions; the action operations perform the executive function.

The first action in junior schoolchildren's learning-activity management is the determination of the learning task's goal. The next process, which is subject to a conscious goal, is the planning of activity execution. The purposeful execution of the learning task as the next action begins only when the planned result is understood. Schoolchildren then control the correctness of the execution and the obtained result. Learning-activity management ends with the subject's assessment of the course and results of the learning task.

The content of each operation in management actions and obtained a full extensive content of management skills is the following:

- goal determination – distinguishing and familiarizing oneself with the activity object, establishing the requirements, conditions, and rules to achieve the result, comprehending the type of activity, distinguishing personal capabilities in the chosen type of activity;
- planning – distinguishing the main operations, determining the order and sequence of operations, determining the rational way to perform the learning activity, correlating the plan and means of performing the learning activity and one's personal capabilities;
- expedient execution – considering the conditions and plan of the learning task, correlating the conditions and plan of the learning task with the executed operations, thoroughly performing the task, obtaining the result, checking the correctness of the obtained correlation, correcting unsuccessful actions, checking the correctness of the obtained correlation, correcting unsuccessful actions, checking the correctness of the obtained correlation, correcting unsuccessful actions;
- control over the course and results of activity – specifying the content of the obtained result, searching for an example for comparison, choosing means to check the result, depending on its content, checking the results by the chosen means, comparison of obtained results and the example for comparison, determining the possibility of performing the learning task in different ways, specifying causes of deviations from the goal.

The model of forming management skills in junior schoolchildren is a combination of the procedural, methodological, substantial, and monitoring component. In its focus and structural logic, the model meets the social requirement of training elementary school graduates, capable of improving their functional literacy, state educational standards, and the content of academic subjects (Figure 3).

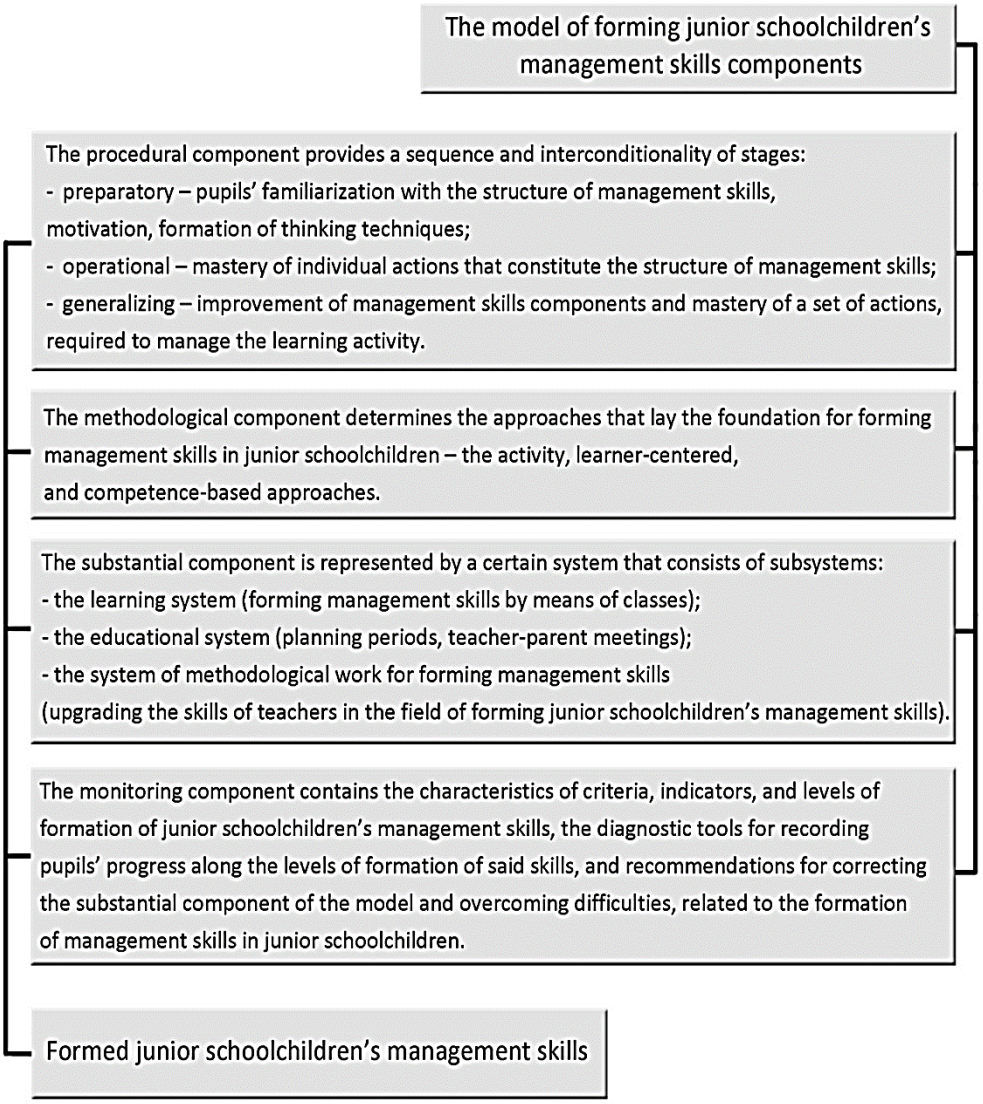

Figure 3. The model of forming junior schoolchildren's management skills components

Discussion and Conclusion

Can note the majority of modern studies depart from the traditional classification of schoolchildren activities (Levy & Ramim, 2015; Jones & Jones, 2015).

In the present research we rely on the concept of D. Tatyanchenko and S. Vorovshchikov (2003), which interprets learning and cognitive activity as a pupils' self-managed activity for solving personally important and socially relevant cognitive problems, accompanied by the mastering of knowledge and skills of acquiring, processing, and applying information, necessary to solve said difficulties. Each group is broken down to an exhaustive set of specific skills and differs, to a certain extent, from traditional classifications of general learning skills (see Table 2)

Table 2. Comparison of existing classifications of general learning skills

Traditional classification	Classification by D. Tatyanchenko & S. Vorovshchikov
Learning-organizational skills (organization of learning activity)	Learning-management skills
Learning-informational skills (working with books and other sources of information)	Learning-informational skills (skills of working with written texts, skills of working with oral texts, skills of working with real objects as sources of information)
Learning-communicative skills (oral and written speech standard)	Learning-logical skills (analysis and synthesis, comparison, generalization and classification, definition of concepts, proving and disproving, definition and solution of problems)
Learning-intellectual skills	

Consider the distinguishing features in the first group of skills. The need for renaming "learning-organizational skills" into "learning-management skills" is determined by the following circumstances. The "organization" concept has a multifaceted content, which is reflected in its various definitions in specialized literature. Organization is viewed as an association of people, commonly achieving a goal and acting by virtue of certain rules, as internal order and coherence of components, as a function of management, which guarantees the interaction of system components to achieve goals.

Of course, the latter interpretation of the "organization" concept – a function of management – served as the basis for the learning-organizational skills group. It is strange that learning as a type of self-management of learning and cognitive activity is reduced to a single function of management – the organizational function.

T. Shamova (2004) set and studied the problem of learning as a self-management process in the 1970s: "The process of learning, from the didactic perspective, is a purposeful, self-managed, reflective-transformational activity, organized by a teacher (or the pupil him- or herself), aimed at mastering knowledge, ways of acquiring, processing, and applying it".

Thus, when examining the process of learning as a process of self-management, it would be more appropriate to call "learning-organizational skills" "learning-management skills" or, for the purpose of this research, "management skills". This predetermines our understanding of schoolchildren's management skills.

To sum up, being system-forming components of the learning activity, management skills are mastered by junior schoolchildren as invariant skills that lay the foundation for mastering other learning skills and abilities and solving learning tasks.

The experimental study of the formation of management skills by teachers in practice showed that the level of psychological and pedagogical, as well as methodological work for forming management skills in junior schoolchildren was insufficient. Data of parents' interrogation also demonstrated an insufficient level of understanding of the designated question.

The research has established the need for making certain changes in the current system of elementary education. The main changes are as follows.

1. Junior schoolchildren's learning activity should be organized and managed by schoolchildren according to the generalized organization (in terms of the present research) of learning activity. Children operate management actions without distinguishing them from the natural course of managing the learning activity; they only accentuate certain actions for the purpose of self-observation or self-comprehension of these actions.

2. The object of junior schoolchildren's special mastering was knowledge of the learning task's goals, plan, and execution, types of control and assessment, and succession in managing the learning activity. The need for mastering them is perceived as a special learning task.

3. The conveyance of substantial and operational knowledge of each management skill takes places consecutively. Children distinguish management actions while managing the learning activity, learn the management action of modelling self-organization stages when performing various learning tasks, which enables observing and recognizing their invariance, independence from the objective content of learning tasks.

The authors believe forming junior schoolchildren's management skills will become effective if the following are developed and implemented: an organizational system for junior schoolchildren's learning activity, aimed at forming management skills; a system of classes that ensure schoolchildren's assimilation of knowledge, skills, and abilities of rationally organizing and managing their activity.

Implications and Recommendations

The proposed model of the content of learning-activity management for junior schoolchildren preserves the substantial distinctness of management actions and operations and creates possibilities for comprehending the structure of learning-activity management to apply knowledge thereof consciously when organizing the educational process in elementary schools.

Disclosure statement

No potential conflict of interest was reported by the authors.

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