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Experimental Research Of The Conditions For Realization Of Creative Potential Of High School Students: Implementation Of Structural-Logical Schemes In The Process Of Studying Subjects Of The Humanitarian Cycle.

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ABSTRACT

The article presents the results of an experimental verification of theoretically grounded didactic conditions for the implementation of creative potential of senior pupils in the process of studying subjects of the humanitarian cycle. The experimental study of the implementation of the first didactic condition – mastering the technology of the use of notes-algorithms during the processing of the content of information sources – has made it possible to prove that the systematic use of the notes-algorithms of the relevant thematic direction helps senior students to discover their creativity in processing the information received, to determine the “key” information necessary for the creation of structural and logical schemes, stimulates the development of autonomy, intuition, awareness of needs creative activities. As a result of the experimental study of the second didactic condition – mastering the methods of generalization, systematization of the educational material and presentation of it in the form of structural and logical schemes – it was found that, creating structural and logical schemes, students carry out mental operations (analysis, synthesis, comparison, generalization, systematization, classification, abstraction, etc.), improve the ability to think creatively, act, solve problems, make conclusions, improvise, demonstrate originality and creativity. Experimental testing of the third didactic condition for the implementation of creative potential – the ability to present structural and logical schemes – confirmed that the decoding of a text, which is presented in graphic or symbolic format, through channels “verbal”, “vocal”, “non-verbal” contributes to the formation of students’ ability to inform, persuade, prove the benefits of the object of presentations.

Keywords: didactic conditions, creative potential, structural logical scheme, high school students, subjects of the humanitarian cycle.

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INTRODUCTION

The concept of modern pedagogical education, and in particular the National Strategy for the Development of Education in Ukraine for 2012-2021, states that at the present stage, the state of the economy and social relations in the state are largely determined by the creativity and activity of its citizens. In this context the study of the possibilities of realizing creative potential as a quality, properties, complex characteristics of an individual, having an integrative, system-forming character and associated with creative activity, creative abilities, as well as its readiness for creative activity and self-realization is important.

An important role in the formation of a creative person belongs to the disciplines of the humanitarian cycle, in particular literature and history. It is they who are called to bring up a young person in accordance with the requirements of modern society: spiritually rich, self-thinking, with a broad worldview, stable moral principles, powerful creative potential, aspiration for socially useful activity.

The implementation of the creative potential of high school students in the study of humanities is provided by an organic combination of traditional and non-traditional methods, forms and means of study. Thus, the use of abstract learning tools, such as structural and logical schemes, allows students to deviate from the standards of thinking, the stereotype of action, contributes to the development of creative features of nature, determines the development of all structural components of creative potential. In addition, at the senior school age – 15-17 years –cognitive and creative processes activate, abstract, creative thinking actively forms in adolescents.

The study of modern psychological and pedagogical works on the subject of research allowed to identify some aspects of scientific research in this direction. Thus, N. Kulakov, S. Lysenkov, Y. Oberman, V. Shatalov, S. Shevchenko and others considered the application of didactic supports in the process of studying students. The ways of fixing the thinking process by means of logical schemes were studied by O. Anisimov, V. Biazzyrov, V. Lefevre and others; The mechanism of block diagram design was developed by P. Mrdulash, V. Paronjanov, S. Smirnov, and others; T. Vakulenko disclosed the positive influence of schematical means of teaching on the formation of systemic knowledge in the dissertation; The specificity of using simulation games, methods and techniques in the learning process was studied by D. Shcherbyna. The analysis of theoretical and practical developments of the scientists and own experience of teaching allowed to identify the contradictions between: the need to implement the creative potential of senior students and the unsatisfactory level of development of this issue in pedagogical theory and practice; the growth of the role of abstract visibility in the educational process and the inadequate use of structural and logical schemes during the study of humanitarian disciplines; the objective need of senior pupils of the implementation of creative potential and the uncertainty of the didactic conditions for its implementation.

The effectiveness of students' learning of the material of the subjects of the humanitarian cycle, as evidenced by the analysis of psychological and pedagogical and methodological sources, depends on many factors, in particular: accounting for the psychological age characteristics of students; individualization of the learning process and its creative character; a favorable emotional atmosphere in the classroom, etc. Each of them requires specific methodological approaches and techniques when studying humanitarian disciplines by the use of the abstract visuals. Investigating this problem, such scholars as M. Apparovich, O. Bandura, P. Hora, L. Dashko, M. Devdera, L. Zelmanova, H. Ivanyts'ka, O. Lukyanova, M. Meshcheriakova, V. Palamarchuk, D. Poltorak, V. Ponomarenko, S. Skliarenko, Ya. Temiz and others, they determined the role of schematic visualization in ensuring the strength of knowledge, found out the effectiveness of the use of star pillars and provided examples of their implementation during the study of subjects in the humanitarian cycle (history, the Ukrainian and foreign literature, the Ukrainian and Russian languages).

In the course of the study, it was assumed that the implementation of the creative potential of high school students in the process of studying the subjects of the humanitarian cycle is ensured by such didactic conditions: mastering the technology of using notes-algorithms while processing the content of information sources (the definition of "key" information needed to create structural and logical schemes); mastering the methods of generalization, systematization of the teaching material and its presentation in the form of structural and logical schemes (use of collapsed forms of presentation of information with the use of conditional-graphic characters-symbols); conscious operation of the presentation skills of the structural and logical schemes (decoding the content of structural and logical schemes and their creative representation).

Thus, the purpose of the study is to identify the influence of theoretically substantiated and experimentally verified didactic conditions on the realization of creative potential of high school students in the process of studying the subjects of the humanitarian cycle.

MATERIALS AND METHODS

In order to solve the problems of research and hypothesis testing a set of methods is used:

- theoretical: the analysis of scientific literature in order to find out the state of development of the problem under the study; systematization, comparison and generalization of the main provisions and approaches for the definition of the conceptual apparatus of the study, the formulation of its conceptual provisions and conclusions; the substantiation of didactic conditions for the implementation of creative potential of senior students;

- empirical: pedagogical observation, conversation, questioning, testing, interviewing students and teachers; a pedagogical experiment in order to identify the effectiveness of certain didactic conditions for implementing the creative potential of senior students;

- statistical: quantitative and qualitative analysis of the obtained results using the methods of mathematical statistics. In particular, in order to check the reliability of the results obtained and to identify the differences in the indicators at the beginning and the end of the pedagogical experiment, in each experimental group separately, the data of the qualimetric model of the influence of the didactic conditions on the realization of creative potential of senior students were used separately. The statistical analysis of the obtained results is performed using student's t-criterion.

Kharkiv Grammar School № 6 "Mariyinska Hymnasiya" and B. M. Liatoshynskyi Kharkiv Music College were selected as the experimental research base. The study was conducted during 2011-2014. 200 high school students were covered by the various types of research.

RESULTS AND DISCUSSION

In the course of scientific research, the presence of at least two types of creative potential in senior students has been confirmed: creative potential, which is manifested in students "situationally", "at the moment", under the condition of a successful coincidence of circumstances and a "long" type of manifestation of creative potential, which has a clearly expressed tendency to "build up" (Yu. Hulko).

The study substantiates the didactic conditions for implementing the creative potential of senior students in the process of studying the subjects of the humanitarian cycle. The first didactic condition – the mastering of the technology of the use of notes-algorithms during the processing of the content of information sources – involves step by step determining the "key" information needed to create structural logic schemes, helps students to see and highlight the main thing in a large stream of information. In the process of working with notes-algorithms, due to the system of reference-points, the main load is carried out not on the memory of students, but on their thinking; predominant one is non-reproductive activity, but creative one; students acquire a significant part of their knowledge not in the finished form, but in the process of self-search of information.

The second didactic condition for the realization of creative potential – mastering the methods of generalization, systematization of the educational material and presentation of it in the form of structural and logical schemes – activates the thinking and imagination of senior students, promotes a deeper learning and understanding of learning material through its symbolic modeling. In addition, studies show: structuring and schematization of text information during the compilation of structural and logical schemes are important components of mnemonic action, which forms the basis of the development of fantasy.

The third didactic condition for the realization of creative potential – the conscious operation of the skills of the presentation of structural and logical schemes – is now becoming of particular relevance, because today the presentation is one of the effective ways to familiarize the audience with the object being promoted.

The presentation of the structural-logical scheme takes place in two stages: the first is to decode the contents of the encoded scheme, in which students learn to read it, find the links between the components; the second is the actual presentation of the structural and logical scheme, which involves a speech on a given topic, which is accompanied by visual images and is aimed at bringing information to the audience. An important difference of such a presentation from other abstract means is the ability to provide information in a visual, volumetric, emotional and in the form of a game.

In order to determine the level of formation of creative potential of high school students and to check the didactic conditions for its realization in the process of studying the subjects of the humanitarian cycle, a pedagogical experiment was carried out at the Kharkiv Grammar School № 6 "Mariyinska Hymnasiya" and in the B. M. Liatoshynskyi Kharkiv Music College. The experiment involved 200 high school students, of which two experimental groups were formed (EH-1 – 128 people and EH-2 – 72 people). The group EH-1 included high school students, who found a "long" type of manifestation of creative potential. The group EH-2 included high school students, in whom the creative potential was manifested "situationally".

In the course of the study, the traditional comparison with the control group was deliberately abandoned, because it is believed that the diagnosis of the development of structural components of creative potential and their dominant features must record the personal progress of each student (as far as there have been changes in their personal growth after the introduction of the technology of the use of notes-algorithms and structural-logical schemes compared to the previous level).

In the course of the qualitative stage of the experiment, low indicators of the formation of abilities and skills of the use of structural and logical schemes in the process of studying the subjects of the humanitarian cycle by senior students were revealed, namely: processing of the content of information sources (EH-1 – 20%, EH-2 – 12%), understanding after reading the causal relationships (EH-1 – 20%, EH-2 – 20%), generalization and systematization of the educational material (EH-1 – 16%, EH-2 – 15%), argumentation of own statements using catch-phrases, quotes, conclusions (EH-1 – 15%, EH-2 – 1%), presentation of educational material contents in graphical form (EH-1 – 17%, EH-2 – 13%), construction of structural and logical schemes (EH-1 – 10%, EH-2 – 0%), presentation of structural and logical schemes (EH-1 – 5%, EH-2 – 0%), creative application of received information (EH-1 – 32%, EH-2 – 18%). In order to identify the level of creative potential, senior students were asked to answer the question "Your creative potential" questionnaire.

The coefficient of manifestation of each sign of the creative potential of the individual was calculated by the formula of mathematical statistics of the average arithmetic mean. The analysis of the results of the diagnosis showed that the students of the group EH-1 did not show enough signs of such creative potential: the ability to present their ideas (14%), improvise (16%), students of the group EH-2 – the ability to present their ideas (9%), improvise (12%), awareness of the need for creative activity (21%).

The purpose of the forming stage of the experiment was to check the didactic conditions for the implementation of the creative potential of high school students by means of structural and logical schemes in the process of studying the subjects of the humanitarian cycle.

The implementation of the first didactic condition – mastering the technology of the use of notes-algorithms during the processing of the content of information sources – in the groups (EH-1, EH-2) – was mastered by senior students in the following way: the participants of the experiment were provided with printed guides, which contained the corresponding notes-algorithms for work with sources of information. In order to avoid difficulties in drawing up structural and logical schemes, it was developed and proposed to use notes-algorithms.

The analysis of the structure of memos allowed defining the memo-algorithm as a system of reference-points, which help to find the necessary information in different sources, to isolate and organize it depending on the goal and the nature of the educational situation. A series of seminars was held with the participants of the experiment: "What types of information sources do you know?", "What are notes-algorithms?", "How to work with notes-algorithms?" Participation in such seminars included acquainting students with different types of sources of information, conceptual apparatus, technology of the use of notes-algorithms in the process of studying subjects of the humanitarian cycle.

In addition, during the experiment, the notes-algorithms were structured in two thematic areas. The first direction – “Enter the students into the world of ideas and images” – included such notes-algorithms: “Something unusual about the life of the glorious”, “Get ready to read the text”, “Analysis of the poetic work”, “Systematization of the features of the individual style of the artist.”

The second thematic direction – “Awaken national dignity”, which revealed the educational possibilities of humanitarian disciplines, includes such notes-algorithms: “Formation of the spiritual world of personality”, “Formation of the national character”, “Program of spiritual formation of personality”. Work with notes-algorithms helped senior students develop their intuition, autonomy, persistence, and realize the need for creative activity. Due to a set of questions and tasks there was a kind of “a dialogue” between a student and a manual, which resulted in enhanced cognitive processes: the students creatively approached to the processing the information received, made relevant conclusions, and determined the “key” information needed to create structural and logical schemes.

Consequently, the implementation of the first didactic condition contributed to a creative approach to knowledge acquisition, analysis, synthesis through a series of systematic, consistent, logically ordered operations, which at the stages of processing and assimilation of material were presented in the form of steps-tips and were designed to form self-educational competence in students.

In the process of realization of the second didactic condition – mastering methods of generalization, systematization of educational material and presentation of it in the form of structural and logical schemes – the participants of the experiment got acquainted with the technology of creating structural and logical schemes and their use in the process of studying the subjects of the humanitarian cycle. Conducting workshops: “What is a structural and logic scheme?”, “Features of the creation of a structural and logical scheme” gave students the opportunity to master the methods of generalization and systematization of the educational material, the technology of constructing structural and logical schemes (the sequence of processes, the ratio of the whole to its equal semantic parts, simultaneity of processes in relation to the whole, interdependence of parts of the whole, relations between objects, phenomena, concepts).

In the course of practical classes the essence of the structural and logical scheme was revealed – the forms of presentation of information, both with the help of various technical means (in computer performance), and without them (in graphical form on paper, in the form of schemes, drawn on the board). At the same time, the variation of the design of the schemes was unlimited, the choice depended on the circumstances and subject of training. In addition, senior students got acquainted with the sequence of compilation of the structural and logical scheme: the selection of information on a certain theme using the notes-algorithms; system-structural analysis of the content of educational information; critical analysis of the developed variant of the scheme, its graphic and colour design, coding of educational information, re-analysis of the scheme; study of the main elements of the scheme and their interconnections; reproduction of the contents of educational information.

When creating structural-logical schemes, senior students formed the ability to think creatively, act, solve problems, make conclusions, improvise, demonstrate originality, and creativity. Submitting the same educational material in the form of structural and logical schemes helped to increase the efficiency of independent work of students in the classroom; to provide material availability for those students who do not know the content of works or historical documents; shorten the time of creative tasks; assimilate the topic of the review; to organize control of knowledge based on age, mental characteristics, which provided to a certain extent the realization of creative potential of senior students. The research presents examples of construction of author's structural and logical schemes taking into account the specifics of educational subjects.

The implementation of the third didactic condition – the conscious operation of the skills of the presentation of structural and logical schemes – in groups (EH-1 and EH-2) was carried out in the following way: with the participants of the experiment, a series of consultations was held: “What is the presentation of the structural-logical scheme?”, “How to present the structural-logical scheme?”, “Why do you need to learn to present the structural-logical scheme?”. The mentioned consultations included acquaintance of students with the conceptual apparatus, features of presentation planning, its structural components, disclosure of the prospect of applying the abilities to present structural and logical schemes in future professional activities. In the process of fulfilling the tasks of the practical block, the students became acquainted with the channels of

the presentation of structural and logical schemes: “verbal” – what I say; “vocal” is the way I speak; “non-verbal” – expression of eyes, gestures, movements.

The conducting of workshops made it possible to understand that the influence on the audience is significantly enhanced by the possession of these means. Senior students were asked, while presenting the structural-logical scheme, to make the audience interested in the object. For this purpose, they made a presentation script which contained graphic, color and verbal design.

Consequently, the testing of the third didactic condition proved that the presentation of structural and logical schemes enables senior students to deviate from the standards of thinking, predetermines the development of all structural components of creative potential: motivational, intellectual, emotional and volitional. In addition, the lessons of presentation of structural and logical schemes contributed to the formation of a positive business qualities in the students: the ability to establish personal contacts and exchange information (development of communication skills), overcome the opposition of the audience, appreciate time.

The purpose of the control stage of the pedagogical experiment was to study and analyze quantitative and qualitative changes obtained during the experimental work.

The dynamics of changes in the formation of senior students’ skills to work with structural and logical schemes based on the results of experimental work are presented in the table.

Summarized results of experimental work (increase in%)

Criteria	Indicators of the formation of skills of applying structural and logical schemes	EH-1 (128 persons)	YEH-2 (72 persons)
The formation of abilities to process the content of information sources with the help of memo-algorithm	Evidence of methods and techniques of self-education	+24	+33
	Self-study of particular issues of the curriculum	+3	+5
	Independent finding of information sources	+11	+16
	Processing of the content of information sources with the help of notes-algorithms	+22	+30
	Definition of the main idea	+4	+5
	Understanding after reading the causal relationships	+9	+9
Formation of skills of generalization, systematization of educational material and presentation of it in the form of structural and logical schemes	Generalization and systematization of educational material	+2	+3
	Selection of the problem, its formulation	+6	+14
	Argumentation of own statements using catch-phrases, quotes, and conclusions	+19	+28
	Using collapsed forms of information presentation	+6	+11
	Submission of the contents of the educational material in a graphic form	+10	+8
	Structural-logical schemes construction	+68	+67
Formation of abilities of presentation of structural-logical schemes	Decoding of structural and logical schemes	+70	+62
	Representation of structural-logical schemes	+12	+14
	Finding errors in the work performed and making suggestions for their correction	+4	+4
	Review of educational material, student responses	+1	+2
	Creative application of the received information	+35	+27
	Self-examination and self-control	+31	+31

From the table it can be seen that due to the formation of skills how to apply structural and logical schemes during the study of subjects of the humanitarian cycle students demonstrate an increase in the level of the dominant features of structural components of creative potential.

In the course of the experiment, it was also found that the use of structural and logical schemes contributed not only to the implementation of the creative potential of senior students under certain conditions, but also to the development of both general education and special skills, namely:

- search (research) abilities: to independently generate ideas; find information in the information field (using notes-algorithms), several options for solving one problem; to put forward hypotheses; establish cause-and-effect relationships; request the necessary information from an expert (teacher, consultant);
- abilities and skills of cooperation: ability to interact with any partner, find and correct mistakes in the work of other group members; skills of mutual assistance in a group when solving common tasks, business partnership communication; collective planning of actions during creation of a structural-logical scheme and its presentation;
- managerial skills: ability to design a scheme, plan activities, time, resources; make decisions and predict their consequences; skills of analyzing own activity (its course and intermediate results);
- communicative skills and abilities: the ability to initiate educational interaction with the audience — to get engaged in a dialogue, ask questions, hold discussions, defend their point of view, find a compromise; interviewing skills, oral interviewing.

CONCLUSION

The didactic conditions for implementing the creative potential of high school students in the study of subjects of the humanitarian cycle have been theoretically substantiated and experimentally verified.

During the implementation of the first didactic condition — mastering the technology of the use of notes-algorithms during the processing of the content of sources of information — it has been proved that the systematic and creative use of the notes-algorithms of the relevant thematic direction helped senior students to creatively approach the processing of the information obtained, make relevant conclusions, to determine the “key” information necessary for the creation of structural and logical schemes, stimulated the development of autonomy, intuition, awareness of the need for creative activity.

Testing of the second didactic condition — mastering the methods of generalization, systematization of the educational material and submission of it in the form of structural and logical schemes — confirmed that the structural-logical schemes contribute to the implementation of the creative potential of senior pupils during the study of subjects in the humanitarian cycle. During the creation of structural and logical schemes, students developed mental operations (analysis, synthesis, comparison, generalization, systematization, classification, abstraction, etc.), formed the ability to think creatively, act, solve problems, make conclusions, improvise, display originality and creativity .

It is proved that the decoding of text presented in graphic or symbolic format through channels “verbal”, “vocal”, “nonverbal” allowed to form students’ ability to inform, persuade, prove the advantages of the presentation object. All the mentioned above testified to the conscious operation by the senior students with the skills of presentation of structural and logical schemes — the third didactic condition for the realization of creative potential.

Comparison of the results of the statement and the formation stages of the experiment has allowed to assert that due to the formation of the ability to apply structural and logical schemes at the lessons of the humanitarian cycle, the level of the dominant signs of creative potential has increased: the awareness of the need for creative activity — by 61%, creative thinking — by 19%, originality — by 11%, intuition — by 14%, the ability to present their ideas — by 26%, improvisation — by 8%, independence — by 25%, positive emotions — by 12%. In addition, during the conducted experiment also revealed that the use of structural and logical schemes contributed not only to the implementation of creative potential of senior pupils under certain conditions, but also provided the development of special skills and abilities: search, managerial, and communicative.

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The conducted work stated that there are changes in the creative potential of senior students in both groups, but they are more significant in the group EH-2. Students who at the beginning of the experiment demonstrated a “situational” type of creativity, reached higher rates at the end of the experiment (+47). Students of the EH-1 group, who at the beginning of the experiment established a “long” type of manifestation of creative potential, during the experiment demonstrated a clearly expressed tendency to “build up” (+42). According to the results of the experiment, it is proved that the use of structural-logical schemes as a means of abstract visibility causes steady cognitive interest in senior students, which, in turn, is an incentive and a certain guarantee of active study of the disciplines of the humanitarian cycle.

The practical significance of the results of the study is that the didactic conditions for the implementation of the creative potential of senior students in the process of studying the subjects of the humanitarian cycle have undergone research and experimental testing and can be applied in the practice of teaching humanitarian disciplines in general educational institutions and in higher educational institutions of I-II accreditation levels .

The main conclusions of the study and recommendations were implemented in the educational process of the Kharkiv Grammar School № 6 “Mariyinska Hymnaziya”, the B. M. Liatoshytskyi Kharkiv Music College, the Kharkiv Housing and Communal Technical College. The developed scientific-methodical materials, notes-algorithms, created structural-logical schemes should be used during the teaching of humanities.

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