

Stimulating students' cognitive activity by means of interactive lectures in a museum environment

Vera Andreeva¹, Svetlana Shmachilina-Tsibenko², Elena Ozhogova³, Ekaterina Namsing³, and Oksana Morozova³

¹North Kazakhstan Regional Museum Association of the Department of Culture, Language Development and Archival Affairs of the Akimat of the North Kazakhstan region

²Private institution educational organization of higher education "Omsk Humanitarian Academy ChUOO VO" OmGA "

³Federal State Budgetary Institution of Higher Education "Omsk State Pedagogical University" (FGBOU VO "OmGPU")

Abstract. Considering the innovative interest of society in competent specialists, Higher Education strives to meet these needs by positioning introduction of interactive learning dynamic application in educational process as one of the forms of cognitive activity organisation. An illustrated lecture, a binary lecture, a consultation lecture and a conference were used in the study as priority means of cognitive activity stimulation. In doing so, we relied on the ideas of museum pedagogy as one of the important conditions of creating dialogicity, searching activity, team interaction and social experience. While conducting the abovementioned lectures in a museum environment, the special atmosphere is being created, which encourages fruitful work with historical sources, receiving information through exhibits, positive communicative environment aimed at initiating cognitive interest and activity, creativity, students' independence in the knowledge assimilation, practical application of skills and abilities. All these, as our research has shown, contribute to the increase of the students' cognitive activity stimulation levels.

1 Introduction

Socio-economic relations, forming both in Russian society and republics of former Soviet Union, demonstrate authentic requirements for such personal qualities, as independence and entrepreneurial attitude, initiative and competence, ability to think creatively, to use the achievements of science and technology, etc. [1]. In other words, everything related to students' cognitive activity stimulation, which means an increase in the level of learning motivation, academic performance incentives, forming students' interest to cognitive activity, etc.

In this regard, the requirements for university lectures and the conditions for their conduction as the main link in the didactic cycle of education are increasing; as a form of cooperative "thinking", initiating questions and desire to find the answers; as a mean of stimulating students' cognitive activity. From these positions, interactive lectures, which are giv-

en a leading role in the State Compulsory Standard of Higher Education of the Republic of Kazakhstan, become of a particular importance as they encourage students to be mentally active, to show a creative research approach, to search for new ideas for solving various problems of educational and scientific activities. Students acquire new priorities, different ways of perceiving and analyzing information.

The essence, content, functions and specificity of students' cognitive activity stimulation are described in the researches of A.I. Gebos [2], R.A. Nizamov [3], T.I. Shamova [4] and others. Interactive lectures as means aimed at the increase in the level of students' cognitive activity stimulation are described in the works of A.A. Verbitskii [5], V.I. Zagviazinskii [6], O.V. Makarenko [7] and others. A new vision of the museum pedagogy potential aimed at a dialogue approach, as an ideal environment for making changes in Higher Education, the professional and visual thinking formation, is revealed in the studies of I.A. Kolesnikova [8], R. Arnheim [9], S.R. Crew [10], A. Reichwein [11] and others.

Despite the sufficient volume of productive researches, the issue of using interactive lectures as a mean of stimulating students' cognitive activity when studying historical disciplines in a museum environment remains controversial.

2 Objectives and methodology

The purpose of the article is to analyze the experience of conducting interactive lectures aimed at increase in the level of stimulation of the cognitive activity of History students in the conditions of the North Kazakhstan Regional Museum of History and Local Lore.

The theoretical and methodological basis of the research was formed by the cultural-historical theory, the psychological activity theory, the subject-activity approach, the environmental and hermeneutic pedagogical approach.

3 Research results discussion

The empirical part of our research was aimed at increasing the level of cognitive activity stimulation of the second-year undergraduate students. Diagnostic techniques were selected taking into account its specificity, and were aimed at identifying the levels of thinking, creativity, self-regulation of behavior, cognitive interest, motivation, independence, cognitive activity.

At the ascertaining stage of the study, the data obtained by the method of J. Bruner [12] showed that, in general, the average level of all types of thinking was formed, namely: 60% of objective thinking, 55% of symbolic thinking, 45% of sign thinking, 40% of image thinking, 50% of creative thinking.

Formation of the behavior self-regulation levels, according to the method of V.I. Morosanova [13], also demonstrated the average result. One third of the students have got significant problems in the context of setting goals and implementing the outlined plan. The level of modeling of the majority of the subjects is developed at an intermediate level; students can choose external and internal conditions for achieving goals, but the choice is not always objective. 20% of the respondents experience a problem with the choice of conditions of both external and internal content, while 5% can fully highlight the significant conditions for achieving their goals.

The level of programming suggests that half of the students can program and think over their actions to achieve their goals. If they do not correspond, students are able to adjust their activities in order to obtain an acceptable result. Error-free programming can be seen among 15% of the students, while 35% of the students cannot, and sometimes do not want to program their actions. They often act impulsively, and they tend to use the trial and error

method. From the results level scale, we can see that more than a half of the total number of students can objectively assess themselves and their actions, which positively affects the achievement of the set goals, but there are problematic points in the assessment, so they are not always inclined to objectivity. Only 15% of the respondents can objectively assess themselves and their actions in any situation, and 30% do not notice their mistakes at all, and are uncritical of their actions.

Flexibility is inherent in less than a third of the surveyed students, these students can make adjustments to their outlined action plan, and in the event of unforeseen circumstances, they can easily assess the situation and evaluate their actions. Half of the students do not always easily tolerate various changes and objectively react to changes in planned actions. A quarter of the surveyed students find it difficult to endure the changing environment, they cannot feel confident and adapt for a long time to new conditions.

Half of the surveyed students are on the way to their independence, which indicates their relative autonomy, their desire to independently plan their activities, to analyze and evaluate. 15% of the respondents freely and without problems plan their actions and assess the situation, while 35% of the respondents, according to the scale of independence, are dependent on the opinions and assessments of others, and they cannot plan independently. Such students are uncritical and often follow the advice of others. Without outside help, they inevitably have constant failures.

More than a half of the respondents have an average self-regulation indicator, which means they objectively react to changes, can evaluate their actions, but they do not always succeed; 10% of the respondents are independent, they respond adequately and flexibly to changing conditions. They are largely aware of setting and achieving the goal. At the same time, 15% of the students experience difficulties in conscious planning and programming of their behavior; these students are dependent on the opinions of others and various situations. Thus, from the results obtained, we can say that most students do not really think about their future. More than a half of the students are able to control their actions, they are aimed at achieving results in educational activities; in this regard, they are able to make adequate decisions, plan their actions. Several people in the group behave impulsively and often make mistakes. A sharp change in the forms of activities in a group is perceived with tension, which indicates the commitment of teachers to traditional forms of conducting lectures. Independence is at low and medium levels, students are subject to other people's opinions, and there are problems with defending their own points of view and vision of situations, events, periods. At the same time, the same indicators for modeling (75%) and self-regulation (75%) can be seen, which indicates an objective response of students to various changes. Almost identical results of the average level of formation were obtained in terms of the intensity of cognitive interest (65%), motivation for university studying (50%), independence (50%) based on the original methods.

The level of cognitive activity in the group was identified using the method of included and not included observation. The levels of students' cognitive activity, proposed by M.S. Shapovalova [14], were taken as a basis. Observation protocols analysis showed that 20% of students are at the copying level, 60% are at the repeating level; 15% are at converting level; 5% are on creative level. As it can be seen, the repetitive level, characterized by the relative independence of the students, dominates. A student works according to the predetermined problem-solving algorithm, his/her activity in learning comes out from time to time. In addition to that, it is alarming that only 5% of the students are at the creative level of cognitive activity and have the ability to apply in practice a set of methods for effective problem solving in the field of professional activity.

The obtained results analysis indicates the need to carry out certain work to stimulate the cognitive activity of the second-year undergraduate students of the North-Kazakhstan State University named after M. Kozybaev.

This study was based on theoretically significant conclusions and generalizations that this is a specific activity that integrates with the student's educational and other types of activities. S.Ia. Batyshev points out their differences. He believes that "the point of educational activity is in adopting ready-made, acquired by others knowledge about the world, while cognitive activity is aimed at achieving an understanding of the surrounding reality. In other words, it assumes greater independence of the student" [15].

By stimulating the students' cognitive activity, we mean "the purposeful activity of the teacher, aimed at improving the contents, methods, techniques, means and forms of studying in order to arouse interest, increase activity, creativity, independence of students in the assimilation of knowledge, the formation of skills and their application in practice." [16].

The priority goals of stimulating the students' cognitive activity, in accordance with the State Compulsory Standard of Higher Education of the Republic of Kazakhstan, is to develop interest, increase activity, creativity, independence in mastering the system of competencies. This fact was taken into account in our research, because, according to this document, there was a significant increase in the proportion of independent work.

At the formative stage, a cycle of interactive lectures was introduced into the practical educational process in the "History of Kazakhstan" discipline, in order to increase the level of the students' cognitive activity stimulation. The lectures were delivered in the North Kazakhstan Regional Museum of History and Local Lore.

The visual lecture on the topic of "The beginning of the Great Patriotic War" was delivered using the technologies of critical thinking development and gamification. To deliver this type of interactive lecture, we chose the expositions of the local history museum. Here students are literally surrounded by visual information: maps of military operations, photographs, memories, awards of the Great Patriotic War participants, documents, weapons, uniforms, etc. A special atmosphere, which encourages fruitful work with historical sources and exhibits, is created.

In this lecture, we used a lot of visual material. Its use increases the percentage of successful students' material assimilation, since visual information in any form contains elements of a problem. The solving of the latter occurs on the basis of analysis, generalization, synthesis, folding or deployment, in other words, with the inclusion of active mental work. The lecture contributed to the formation of students' professional thinking by highlighting and systematizing the most essential and significant elements.

Binary lecture on the topic of "Siege is a duel with death. The war history of the 314th Infantry Division" was delivered using the technologies of critical thinking development. The following main goals were pursued: to acquaint students with the history of the most brutal siege of the city in the history of mankind on the basis of historical documents and literary sources, memories of the citizens of besieged Leningrad; to show the courage and stamina of the citizens and defenders of Leningrad; to acquaint the students with the war history of the 314th Infantry Division, which participated in the defense and breaking the siege of Leningrad; on the basis of an interconnected dialogue of lecturers, create an emotionally positive atmosphere, involving students in a dialogue; to show a visual representation of the dialogue conduction methods and the opportunity to participate in it.

As a result of the application of all functional components of the model for cognitive activity stimulation, the lecture helped to increase the level of motivation for studying historical events, analytical skills, selectivity, decision-making in difficult situations, and created conditions for the practical application of knowledge. It had a great educational and cognitive effect, and its techniques, used by teachers, encouraged the students' preparation for independent practical activity. The students sought to immerse themselves in learning about the difficult siege time, the role of the map system in the life of the city, people's dystrophy, high mortality level and the indescribable will of people for life and freedom. During the lecture, we resorted not only to reading the poems of Olga Berggolts, demonstrating the

diary of Tania Savicheva, studying the memories of the citizens of the besieged city evacuated via the “Road of Life”, but also used comparative hermeneutical techniques to create and make students feel the special atmosphere of that time. For example, “translation” of the historical text into the language of the modern social situation, polemical dialogue with the author of the text, interpretation of the historical text from the standpoint of various subjects of the educational process” [17].

Consultation lecture on the topic of “The Battle of Stalingrad. 200 days and nights”.

To deliver this lecture, we used the “I Know - I Want to Know - I’ve learnt” technique by inviting students to fill in the first “I know” column (assumptions, associations, other information about the Battle of Stalingrad). After that, together with the students and in accordance with the lecture plan, we formulated the “What do I want to know?” questions. By filling in the second column of the table.

The use of this technique made the students co-authors of the lecture. The need to formulate the question and bring it to the audience encouraged stimulation of mental activity, and the expectation of an answer focused students’ attention. Students’ questions in most cases were problematic in nature, and they were the beginning of creative thinking processes.

During the lecture, the essence of all planned thematic points was revealed, thereby we tried to show a personal, professional and social attitude to the problems posed and their answers. For general convenience, we have put the questions in chronological order and proceeded to study new material. During studying new material, our task was not only to present and reveal new facts and knowledge, but also to direct students to the sense-seeking activity. For example, during studying about the forces correlation on the eve of the Battle of Stalingrad, different opinions were expressed about the historical document “Order of the People’s Commissar of Defense of the USSR No. 227 dated July 28, 1942”, known as “No step back!”. The presence of different points of view on this document made it possible to bring students to a team discussion of correct and incorrect judgments, to draw independent conclusions and generalizations. At the end of the lecture, students filled in the third column of the table.

This type of lecture contributed to the development of cognitive motivation; independence, the ability to formulate and ask questions, the formation of working with historical documents skills; interpretation of historical events, their analysis, comparison, and the ability to identify the main thing. During studying the material, our task was not only to present and reveal new facts and knowledge, but also to lead students to the formation of a personal position, the development of the tolerant dialogue and mutual understanding ability; the development of students’ ability to create situations of meaning-actualization in the educational process, to be aware of their contribution to the situational context of understanding, the development of methods for managing their psychoemotional states. This lecture encouraged students to prepare for independent practical activities, go beyond formal knowledge, focus on research, which takes into account not only the achievements of History and practice, but also the individual experience of a modern student.

The conference lecture on the topic of “North Kazakhstan region during the Second World War” was aimed at involving students in research activities in order to form their cognitive and creative abilities, encouraging them to strive for self-education and self-improvement; practicing speaking skills in front of an audience. We also sought to form their historical thinking by systematizing and highlighting the most significant, essential elements of the educational content.

To conduct this type of lecture, we suggested that students choose the topic of their reports in accordance with the planned topic of the lecture. Since there are no special textbooks on this topic, to prepare their reports, the students carried out research work in the State Archives of the North Kazakhstan region, the funds of the North-Kazakhstan Region-

al Museum of History and Local Lore, museums and archives of Petropavlovsk enterprises, which are former defense plants. Through working with information sources, documents, photographs, we sought to teach students to activate what they had previously learnt; highlight the main thing and systematize the highlighted; analyze key episodes from various historical records; describe phenomena, processes and justify them. At the preparatory stage, the following topics of the reports were identified: “Military units formed on the territory of the North Kazakhstan region”. “Military hospitals functioning in the North Kazakhstan region”. “Defense Fund, the contribution of the North Kazakhstan region, and in particular the city of Petropavlovsk, to the victory”. “The role of defense plants and railways” and others.

The reports presented by the students were quite interesting and informative, especially Anara D.’s report on the North Kazakhstan hospitals. The report was very emotional and detailed, which indicated that the student showed a genuine interest in this topic. Almost all students who were not involved in the preparation of reports participated actively in the conference, asked questions, and added information to the presented material. At the end of each discussed question, they, together with the teacher, summarized the presented material and drew conclusions.

Illustrated lecture “To keep the life going on...”, dedicated to the victims and prisoners of Nazi concentration camps and North Kazakhstanis, who ended up in concentration camps by the will of fate.

At the beginning of our lecture, we decided to bend the rules and we did not cover the lesson plan. Instead, in the lecture hall we put a magnetic whiteboard with markers and asked students what associations they have with the term “Holocaust”. It turned out that not all students were familiar with this concept – some had heard that it was a washing powder and two students could not answer this question at all. In order to determine the understanding of this term, we used various methods and techniques. For example, the use of the differentiating historical concepts technique helped to understand the essence of historical events during the Second World War. The method of imaginative (from the French “image” – picture, representation) learning allowed us to understand the meaning of the term “Holocaust” on the basis of the drawings, photographs, sketches, and readable symbols presented in the museum.

The lecture began with a presentation “To keep the life going on...” and a story about the difficult fate of people who were captured, about the system of concentration camps in Nazi Germany, about the fate of captured soldiers from Northern Kazakhstan – V.D. Mitin, A. Rezinken, about a child prisoner of the concentration camp Zoia Koltsova. The lecturer’s speech was supported by the demonstration of documentary videos dedicated to the victims of concentration camps, and followed by an acquaintance with the exhibition prepared by the Scientific and Educational Center “Holocaust” (the city of Moscow): “Holocaust: Destruction, Liberation, Salvation”. The lecture was presented in a specially equipped hall of the local history museum. For a greater emotional mood Czech hedgehogs were placed and barbed wire was stretched there. Using these forms of visualization, we wanted students to feel the tragic fate of the victims of Nazism, and on the basis of real historical facts to teach the ability to comprehend modern sources of information, in which the truth about important events of the Second World War has been silenced and distorted lately.

During summarizing the results, we used the magnetic whiteboard, inviting students to re-examine the term “Holocaust” using the “Cinquain” technique. At the end of the lecture in memory of the Nazism victims and concentration camps prisoners, the students and the teachers lit memory candles. This lecture aroused a great emotional reaction and a keen interest from the students. With the help of visual material we managed to convey information on all the main points of the lecture. The lecture contributed to the formation of

students' patriotism, historical memory, passion, and professional thinking by research reflection and highlighting and systematizing the most essential and significant elements.

The lectures mentioned were aimed at developing cognitive interest and activity; involvement in research activities; the formation of the self-education and self-improvement desire in order to form students' professional (historical) thinking by systematizing and highlighting the most significant and essential elements of the contents of education; the development of the motive for learning as a necessary indicator of the students' personal position formation; the analytical skills development; independent practical activity.

4 Conclusion

At the control stage of the research, the same methods were used as at the ascertaining one. At this stage, repeated diagnostics revealed that the high and average indicators of imaginative thinking increased by 15%, the high indicator of creative thinking increased by 20%, whereas the average remained at the same level of 50%. The level of behavior self-regulation has improved in all positions. The level of programming and independence has significantly increased. The average level of programming has increased by 20%, the high and average level of independence increased by 5% and 20%, respectively. The average level of independence has increased by 25%. The level of motivation has increased by 20%, the level of interest has increased at a high level by 25%, low and medium levels decreased by 10% and 15%, respectively.

The experimental work control stage analysis allows us to conclude that, as a result of the use of interactive lectures, in order to stimulate the level of cognitive activity in a museum environment, the number of students with a creative and transformative level of cognitive activity increased by 5% and 15%, respectively. At the same time, there was a decrease in the number students who are at the copying and repeating level by 10% and 10%, respectively. Comparative analysis of the ascertaining and control experiments results confirmed the effectiveness of using interactive lectures as a means of stimulating the students' cognitive activity.

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