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THE COGNITIVE ESSENCE OF STUDENTS' INTELLECTUAL ACTIVITY IN THE INTELLECT-MAPPING FORMAT

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Abstract. This article examines the possibilities of intelligence-mapping technology, contributing to the formation of a developed, literate, creative, proactive student personality, capable of solving non-standard intellectual and moral problems, actively participating in social life.

The qualification requirements prescribed in State Educational Standard of Higher Education are outlined, which should be achieved not only by the student-faculty, but also by every teacher, as it is a teacher who is the main and the main subject designed to solve the problems of education development. The active position of the teacher in the educational process is a resource for improving the quality of education and one of the driving forces for the activation of intellectual abilities of students, therefore, the right choice of learning technologies is the key to successful and harmonious development of students. The author refers to such technologies as cognitive visualization methods for solving various educational tasks in the process of higher education and, in particular, when teaching language. The author analyzes the relevance and heuristic potential of mind maps as one of the effective methods of cognitive information visualization. With the help of mind mapping technologies and competent use of mental verbs such cognitive processes as memory, attention, perception and understanding of information, thinking, analysis and synthesis are activated, which is the key to successful development of students' intellectual activity.

Keywords: intellectual activity, learning technologies, mind-mapping, mind maps, mental verbs, central image, associations, Google system.

Basic provisions

The system of professional higher education in Kazakhstan is under constant and continuous change, with the aim of training highly qualified specialists able to compete in an unstable labour market.

According to the qualification characteristics prescribed in the State Educational Standard of Higher Education of the Republic of Kazakhstan, undergraduates studying in the educational programme 6B01703 – «Russian language and literature» should be able to express their thoughts competently, logically, persuasively and understandably. Students should have a high culture of thinking, and have the cognitive skills required to perform their professional functions. Use methods and tools of basic and major disciplines in their professional activities, have skills of independent work acquisition of new knowledge using modern technologies, demonstrate knowledge of speech norms of professional sphere of activity, basics of business communication and documentation [1]. In other words, a future specialist-philologist should develop as a personality, intellectually active, capable of generating new knowledge and creating

new humanitarian products on their basis; a personality aware of full social responsibility for the decisions made and the results of professional activity.

Such personality qualities of a future specialist-philologist can be formed in the educational process based on modern pedagogical technologies of activity type. Such technologies make it possible to move to a qualitatively new level of learning: from reproductive assimilation of knowledge to acquisition and comprehension of knowledge in the process of activity, and, above all, intellectual activity.

Introduction

Increasing students' motivation to show initiative and independence in discovering new knowledge necessary to solve problem situations, when the student, while studying the material, is able to divide it into parts, argue his/her opinion, draw conclusions, compile information in different ways, offer alternative solutions, becomes the main task of the university teacher.

At the solution-seeking stage, the teacher encourages the students to propose and test hypotheses, i.e. ensures the «discovery» of knowledge through trial and error. Making the right reasoned decision is always a product of intellectual activity. Thus, in solving the problem of creating a new developing educational environment, modern learning technologies are of great importance, thanks to which in the educational process of the university completely new opportunities are created to implement didactic principles of individualization and differentiation of learning, positively affecting the development of cognitive activity of students, their intellectual activity, consciousness, the conditions of transition from learning to self-learning are implemented [2]. Especially technologies aimed at maintaining and developing the intellectual activity of students.

Ya.A.Ponomarev considers intellectual (creative) activity in a broad sense as a development mechanism, as an interaction leading to development [3]. A.I. Krupnov understands intellectual activity as «a special state or stable property, manifested in a high level of intensity of the implementation of behavior, activity or any interaction emanating from the internal initiative of the person himself» [4]. N.M.Melnikova notes that intellectual initiative is the ability of an individual to purposeful, independent, active actions that contribute to the creation of an intellectual product [5].

One of the effective ways to develop intellectual activity in the processes of generating knowledge necessary to solve problem situations, both educational and social, we consider mental mapping technologies. The most popular in the educational process are cognitive and mind maps. Mind maps function in accordance with the natural structure of the brain, so it is easier to perceive and remember the information displayed on the map. It is an effective form of note-taking that differs significantly from traditional note-taking [6]. Mind maps are an effective method to use with students in the learning process [7].

Materials and methods

Descartes said: «There is no problem that I cannot solve. If I am suddenly unable to solve it, I break it in half and try to solve each part of it separately. And if one of

them still can't be solved, I divide it up, etc.» So in the educational process, students face many educational, social, personal problems. And in order to motivate students to solve these problems, to make the process of mastering knowledge more productive, interesting and visual, shaping the personality of a future specialist, we must offer the student the most productive technology in a particular educational situation. And such a technology, in our view, is mind mapping technology. Just as no one doubts the universality of Descartes' advice, mind mapping technology becomes a universal tool in analysing and solving professional, scientific and other problems for university graduates who have mastered it.

H.Muller talks about mind mapping as a method that allows a person to cope with, manage and structure the flow of information. Using this method, one gets rid of the fear of forgetting or losing some information, of drowning in a sea of information [8].

Mapping as a way of depicting the process of general systems thinking with the help of diagrams is presented in the work of T. and B.Buzan. British scientists define a mind map as a graphical expression of the process of radiant thinking [9]. The name radiant thinking comes from the term «Radiant» – a point in the celestial sphere, from which the visible paths of bodies with equally directed velocities, for example, meteorites of the same stream, seem to emanate. Similarly, radiant thinking refers to associative thought processes, the starting point or point of application of which is the central object [10]. The reaction to this object is the process of excitation, which spreads from one nerve cell to another, capturing all new parts of the brain, and activating various information stored in memory.

Radiant thinking allows the student to:

• connect information from completely different areas to the solution of the problem;

• to avoid the phenomenon when the thought rushes about within the framework of one associative space, and the student is not able to look at the problem in a new way;

• see a non-standard solution.

Mapping in the educational process allows you to identify the key objects of the situation, establish a system of relationships between them and schematically, graphically display the essential parameters of information. With the help of mapping, students learn to retell, highlight key words, moments, systematize and analyze educational material. When working with text using a map, students learn to collapse and expand information; remember it better thanks to associations and animation with drawings; can see all elements of the text. In addition, the process of building mind maps makes learning creative and exciting, develops creative thinking, communicative competencies of future philologists, so the central task of higher education teachers is to teach students to think not only laterally, but also multidimensionally (radiantly). This, of course, will help the method of mind maps, as a universal technique for presenting and visualizing the process of thinking or structuring information.

«Information visualization» is considered as a graphical representation of abstract data. This concept was considered by R.S.Anderson and F.Bartlett in the theory of schemes and by C.Folker, M.Minsky in the theory of frames as the removal of mental

images from the internal plan to the external plan in the process of cognitive activity, the form of which is spontaneously determined by the mechanism of associative display. Since the time of Ya.A.Comenius, the principle of visibility has been one of the leading didactic principles. The principle of visualization justifies itself in the event that the content of training is dominated by external properties and signs. In this case, there is a need to activate mental actions that allow you to comprehend the connections between objects and phenomena [11].

The desire to visualise not only the information, but also the thinking process itself becomes the stimulus and starting point of intellectual activity. And mental mapping itself becomes the means of its realisation. The technology of mind mapping, proposed by T. and B. Busen, is graphically built from a central concept. The central object is depicted in the middle of the sheet, it can be a drawing or a geometric figure, which has to be signed. Branches of main ideas are attached to the central image, and from these branches branch off secondary ones related to the idea in question. Usually from two to ten. To the subordinate ideas are added lower level ideas with even more detail, etc.

Idea lines usually have different thicknesses on the map, they must be signed and supplied with drawings. When compiling a mind map, it is recommended to use different fonts, colors, sizes.

Compiling a mind map comes down to the following basic procedures:

1) The basic idea is chosen as the object of attention / study and expressed in the central image / word. This image is considered as a basic concept / theme, which, as elements of its structure, includes concepts of a lower level [12].

For example, the development of intellectual activity of students of philology is connected with the dynamic process of analysis, synthesis, abstraction and generalisation. Its development is significantly influenced by the ability to operate with mental verbs in the learning process, since it is the meaning of the verb, as a cognitive structure that a person forms in the mind, reflects a certain layer of human experience, a certain perception of the world.

In this case, the verb is understood as a linguistic form that conveys a certain mental content and has its own verbal and non-verbal representation, its own representation in the internal lexicon of a person.

Therefore, the verbs of mental activity are given a special place in the lexical system of the language, since their semantics reflects a complex thought process, including the content of thought, communication and their evaluation.

Consequently, *intellectual activity* can and should be explored through the semantics of mental verbs. Then the central part of the functional-semantic mental field is formed, as it seems to us, by *intellectual activity*, which initially has this ability to carry out intellectual activity. It is categorical and includes an indication of the various properties of the thought process.

Thus, the central object of our mind map is represented by *the intellectual activity* cognitive frame, which includes various aspects of the actualization of the general concept of the process of mental activity.

And mental verbs are key (basic) in the field of mental activity, since their semantics contain an indication of the main parameters of the thought process.

2) So, we have decided on the central image. Further, the basic idea is implemented in a system of topics, which are divided into categories. The choice of categories is carried out on the basis of associations to the word *intellectual activity*. The main themes associated with the object of study diverge from the central image in the form of branches that denote these categories.

Thus, the system of associations to the stimulus *intellectual activity* (in our case) consists of concepts reflecting the student's mental activity of a reproductive and productive nature. Mind maps are usually drawn and read from right to left, clockwise. Therefore, the processes on the first three branches on the right side of the sheet of our map reflect reproductive mental activity, and *intellectual activity* is expressed here by such associations of the first level as 1. «Mental process» – immersion in thoughts, or memorization (knowledge); 2. «Mental state» –understanding and reflection; 3. «Demonstration of knowledge» – the application and adaptation of knowledge in any learning situation.

Further, on the left side of the mind map, productive mental activity is presented, expressed through 4. «Mental action» - analysis; 5. «The ability to perform a mental action» – assessment; 6. «Creating a mental product» – synthesis.

So, we have designated the associations of the first level coming from the central image. To ensure three-dimensional perception, we add a color or pattern to each branch.

3) Branch concepts generate a system of their own associations, which, in the form of branches of the second level, depart from them and are also indicated by keywords or images, color and pattern. Thus, these associations are represented by mental verbs of each level of the thought process.

There is a whole section of verbs of intellectual activity, which are clearly delineated from the thought process, state and demonstration of knowledge to indicate the result of mental activity and the ability to perform mental operations in the explanatory dictionary of Russian verbs L.G.Babenko [13].

The basic verbs of mental activity, reflecting the process of intellectual activity, are:

- Knowledge verbs – perceive, find, read (retell);
- verbs of understanding – comprehend, compare, realize;
- verbs of application – weigh, classify, generalize;

These verbs are reflected in the branches of the second level of reproductive mental activity.

On the left side, branches of the second level are also added, which reflect the thought process of a higher cognitive level, when a student, studying the material, is able to divide it into parts, argue his opinion, draw conclusions, compile information in different ways, and offer alternative solutions.

At this stage, intellectual activity is expressed by the following mental verbs: verbs of analysis – analyze, explore, categorize;

evaluation verbs – reason, evaluate, summarize; creation verbs – design, interpret, compose (create).

4) Thus, the key images of each branch are identified, which can be a stimulus for a new flow of associations. And each association, in turn, has an almost infinite number of connections with other associations.

Key images are again considered as stimuli and the next level of concepts can be continued, for example, to describe activities that are combined with mental verbs:

Knowledge – reproduction from memory, commenting, working with text, etc.;

understanding – highlighting the main thing, searching, keeping a diary (blog);

applications – editing, collation, mapping, etc.;

analysis – conducting an experiment, comparing data, summarizing, etc.;

assessments – modeling, drawing conclusions, exchange of opinions;

creation – multimedia presentations, protection of projects, maps, etc. (Fig.1)

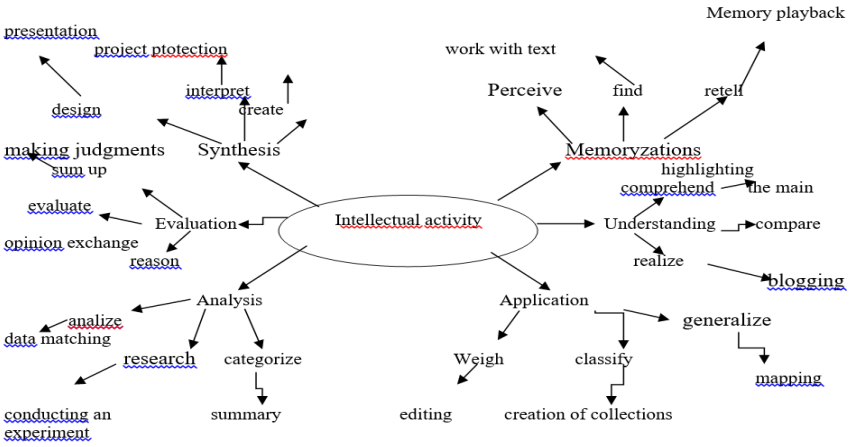

Figure 1. Mind map of the concept of «Intellectual activity»

It follows from the above that it is possible to endlessly add branches with new mental verbs to the demonstrated mind map, which will contribute to new types of intellectual activity, thereby stimulating the intellectual activity of students.

Results and discussion

In this article, we have demonstrated only one of the examples of the implementation of mental mapping technology in the educational process. As our experience has shown, the proposed approach to the development of lessons (or a cycle of lessons) based on the technology of mental mapping contributes to the systematization of the acquired knowledge and its application in solving specific problems. It significantly increases students' interest in the topic under study and the subject as a whole, involves them in the creative process, and expands their worldview. In addition to the traditional creation of mind maps on paper, there are many other ways, for example, based on digital technologies, where you can create real

masterpieces in a matter of minutes using a mouse and keyboard, spending a minimum of effort and money.

Nowadays, there are many online services for designing mind maps. The most popular ones are:

Google system. The free Google app (www.coogle.it) works online and offers a rather interesting interface for working with metal maps. All you need to use this app is a registered Google account. In this app, you can create handy, beautiful mind maps using simple tools. The program automatically adjusts the size and design of the branches and inscription areas, which is a definite advantage, as it saves time, especially when the mind map needs to be created quickly. The program also supports the use of pictures, color schemes that can be attached to branches with text for greater clarity. In general, the program is free, but additional features can only be obtained after purchasing special activation codes. However, when creating bright maps, what is offered for free use is quite enough. More functional than Coogle is MindMap, which has an interface similar to those of the Office group. This application offers a wealth of possibilities for creating mind maps with a personalised design. The size of branches and areas, their color can be set manually. At the same time, the function of automatic calculation of the place of the ideal connection of branches with the original concept and with peripheral elements is preserved. The program has a huge selection of tools that allow you to make the mind map more visual for perception. Including - the ability to make signatures on the branches. A disadvantage of the programme is that it is not free [14].

In general, a feature of electronic mind maps, which is fundamentally important for solving the problem of developing students' systemic holistic knowledge of the discipline, is their ability to adjust and build up elements, increase the number of levels. This allows each student to create his or her own personal information environment, adding new elements and connections to it. Working in such an environment, the student independently "builds up" his knowledge system taking into account his own educational needs, which undoubtedly stimulates his intellectual activity. Thus, on the basis of the basic environment many personal information environments are formed, thanks to which it is also possible to exchange files with mind maps and different sources of information between students [15]. In this case, the teacher is required to set a clear goal of this task with a presentation of sample versions of mind maps and a detailed explanation of the algorithm of their creation with an indication of computer programs in which it is most convenient to engage in this type of activity

Conclusion

In conclusion, once again, the uniqueness of mind maps lies in the fact that they can be applied to absolutely any sphere of life, to any image that comes to your mind. In this article, by analyzing the cognitive essence of intellectual activity, we have seen how the graphical representation of all the relationships described above presents a significant amount of information and creates a context for the consideration of the mentioned problem - intellectual activity of philological students. The methodology will allow philology students to improve their work with texts, to remember the

information contained in them better. The most important things to keep in mind when creating mind maps are: to use emphases, to associate, to strive for clarity of expression and to respect their hierarchy, to respect the number sequence and, of course, to use as many colours as possible, but remember that the colours we choose always make more sense than they might seem.

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ИНТЕЛЛЕКТУАЛДЫҚ КАРТА ФОРМАТЫНДАҒЫ СТУДЕНТТЕРДІҢ ТАНЫМДЫҚ БЕЛСЕНДІЛІГІНІҢ МӘНІ

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Аңдатпа. Бұл мақалада стандартты емес зияткерлік және адамгершілік міндеттерді шеше алатын, қоғамның әлеуметтік өміріне белсенді қатыса алатын дамыған, сауатты, шығармашыл, бастамашыл студенттік тұлғаны қалыптастыруға ықпал ететін интеллект-карта жасау технологиясының мүмкіндіктері қарастырылады. Жоғары білім берудің МББС-да жазылған біліктілік талаптары белгіленген, оларға қол жеткізуге тек студент-филолог қана емес, сонымен қатар әрбір оқытушы да ұмтылуы тиіс, өйткені педагог білім беруді дамыту міндеттерін шешуге арналған негізгі және басты субъект болып табылады. Оқу үрдісінде оқытушының белсенді ұстанымы білім беру сапасын арттыру ресурсы болып табылады және студенттердің зияткерлік қабілеттерін белсендіру үшін қозғаушы күштің бірі болып табылады, демек, оқыту технологияларын дұрыс таңдау білім алушылардың табысты және үйлесімді дамуының кепілі болып табылады. Мұндай технологияларға автор жоғары білім алу процесінде, атап айтқанда, тілді оқыту кезінде әртүрлі оқу міндеттерін шешу үшін когнитивті визуализация әдістерін жатқызады. Мақалада автор ақпаратты когнитивті визуализациялаудың тиімді әдістерінің бірі ретінде менталдық карталардың өзектілігі мен эвристикалық әлеуетін талдайды. Ментальды етістіктермен ментальды карталау және сауатты операция жасау технологияларының көмегімен есте сақтау, назар салу, ақпаратты қабылдау және түсіну, ойлау, талдау және синтездеу сияқты когнитивті процестер белсендіріледі, бұл студенттердің зияткерлік белсенділігінің табысты дамуының кепілі болып табылады.

Тірек сөздер: зияткерлік белсенділік, оқыту технологиялары, менталдық карталау, интеллект-карталар, менталдық етістіктер, орталық сурет, қауымдастық, Google жүйесі.

КОГНИТИВНАЯ СУЩНОСТЬ ИНТЕЛЛЕКТУАЛЬНОЙ АКТИВНОСТИ СТУДЕНТОВ В ФОРМАТЕ ИНТЕЛЛЕКТ-КАРТЫ

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Аннотация. В данной статье рассматриваются возможности технологии интеллект-картирования, способствующей формированию развитой, грамотной, творческой, инициативной личности студента, способной решать нестандартные интеллектуальные и нравственные задачи, активно участвовать в социальной жизни общества. Обозначены квалификационные требования, прописанные в ГОСО высшего образования, к достижению которых должен стремиться не только студент-филолог, но и каждый преподаватель, так как именно педагог является основным и главным субъектом, призванным решать задачи развития образования. Активная позиция преподавателя в учебном процессе является ресурсом повышения качества образования и одной из движущих сил для активизации интеллектуальных способностей студентов, следовательно, правильный выбор обучающих технологий является залогом успешного и гармоничного развития обучающихся. К таким технологиям автор относит методы когнитивной визуализации для решения разнообразных учебных задач в процессе получения высшего образования, и, в частности, при обучении языку. В статье автор анализирует актуальность и эвристический потенциал ментальных карт, как одного из эффективных методов когнитивной визуализации информации. С помощью технологий ментального картирования и грамотного оперирования ментальными глаголами активизируются такие когнитивные процессы, как память, внимание, восприятие и понимание

информации, мышление, анализ и синтез, что является залогом успешного развития интеллектуальной активности студентов.

Ключевые слова: интеллектуальная активность, обучающие технологии, ментальное картирование, интеллект-карты, ментальные глаголы, центральный образ, ассоциации, система Google.

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