Implementation of World Experience of Using the Mind Map Method in the System of Higher Military Education of Ukraine: Comparative Analysis

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Abstract: The article is devoted to the analysis of the status of higher Ukrainian military education, in particular, the problem of training future specialists of the Border Guard Service, which seeks to develop in the context of the European one, but faces a number of difficulties and problems. The essence and features of the mind maps method have been presented. The use of the mind maps method by the world community and, for the purpose of comparative analysis, by the Ukrainian educational system, on the example of a higher educational institution of the Border Guard Agency of Ukraine, has been analysed. The fragments of the mind maps usage in the educational process of the Border Guard Academy during the teaching of various subjects (politological, economics) have been presented. The results of the conducted surveys, conversations, observations on the presented problem have been processed on the basis of mathematical statistical tools. The state of introduction of the method of mind maps in the system of higher military education of Ukraine has been analysed. Such a study has been carried out on the basis of a comparative method between study groups of cadets of the Border Guard Academy, in different specialties and during the teaching of both humanities and special military educational subjects. The article summarizes the conclusions of the conducted research, the essence of which is the need to change and transform the Ukrainian educational system from a conservative to a liberal and democratic one, in parallel with other social entities in Ukrainian society.

Keywords: *method; technology; future border guard officers; mind map; innovation; education.*

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1. Introduction

Western and Asian education systems set forth a goal to prepare the kind of specialist that modern society needs. Education and technology were the driving forces behind the open political and economic systems in the world (Rosling, 2018). Precisely such systems function in the United Kingdom, the United States, South Korea, Japan and Singapore (Freeland, 2013). No society needs technology that cannot be used by its citizens. In this regard, countries in Europe, North America and the Pacific Region have transformed their educational systems (Merchie, 2012). This experience is extremely useful for the Ukrainian nation, which has been in a transitional state of development for 28 years. Neither politics nor the economy showed any positive dynamic changes, as education provides the Ukrainian labour market with the necessary specialists (Acemoglu & Robinson, 2012).

In general, education in Ukraine is a fairly conservative social sphere, it always difficult perceived and perceives innovations. At the same time, a phenomenon has been in progress for 28 years and called by American researcher Thomas Nichols as a loss of respect for professionalism and specialization (Nichols, 2017). There are requirements that do not enhance the level of training of future specialists in the Ukrainian higher education system, including the military. The above-mentioned requirements and reforms are mostly nominal in nature, such as the need for a certain number of scientific publications, participation in international study placements, requirements for the introduction of innovations in the educational process (Rothstein, 2011). We were interested in the problem of using the method of mental or also called mind maps, which is widespread in the world but little known in Ukraine (Edwards et al., 2016).

2. Literature Review

Modern scientific literature is represented by a considerable amount of scientific works devoted to the method of mind maps (Edwards, 2010). First of all, these are the works of the founder of the mental map method Tony Buzan, who initiated not only a method but a scientific field and his scientific school with his followers (Buzan, 2005).

While reviewing the literature on the problem presented, we did not aim to plunge into the history of the creation of the mind map method; enough of such material has already been created (Brinkmann, 2003). It should be emphasized that the technology (or method) of mind maps is popular in well-known universities of the world, such as Cambridge and

Oxford (Scardamalia & Bereiter, 2006), leading universities in the United States and so on (Van Tassel, 2001). Another feature that can be seen in the literature is that the method is actively used in the management field, in particular, statistical and analytical reports are now provided in the form of mind maps (Farrand, 2002).

However, the most interesting trend is the use of the mind map method in the implementation of medical education (Davies M., 2010). Competent medical education is the key to the health and quality of life of the country's population (D'Antoni, 2009).

We could not rely upon the scientific sources of national (Ukrainian) authors since the Ukrainian studies on the proposed problem are mostly of a review nature.

3. Materials and Methods

Higher military education in Ukraine is in need of modernization, as it is replicating the Soviet system of military education in its content, which has many disadvantages. However, the biggest drawback is that the Soviet system of military officers training was created following the example of a German system that is idealistic, unlike the British or even the American one. The lack of rationalism in the training of future border guard officers results in erroneous decisions within the management sphere of the border guard authority, and ultimately in the impossibility of reforming it.

The authorities of the present-day Border Guard Service of Ukraine put an emphasis, perhaps in connection with military operations localized in the eastern territories of the state, on the military component of the activity of border guard servicemen. All the promotional videos testify to this (<https://dpsu.gov.ua/ua/online/>).

In our opinion, we should emphasize and direct efforts in the future officers training onto the intellectual component of their activities.

Why did we focus attention on the method of mind maps? The most important task of high school is to train a specialist not only pursuant to the chosen profile (specialty) but also concerning the formation of his or her critical thinking i.e. fast, high-quality, rational, based on the procedures of analysis, synthesis, comparison, classification and contrast (Tee, 2014) The value of the method of mind maps lies in the involvement of both hemispheres of the human brain, which allows combining, from scientists perspective, logical and alogical (Eppler, 2006).

According to the logic of scientific research, we conducted a survey among representatives of the academic and teaching staff of the National

Academy of State Border Guard Service of Ukraine (hereinafter referred to as the NASBGSU), which provides a higher level of understanding of the essence of the method of mind maps. There are 25 departments in the Academy; most of them provide teaching of military special subjects, a share – legal subjects, others – humanity subjects. About 370 instructors, both military personnel and civilians, work at these departments. We are not able to reach everyone in the survey, so the sample of respondents made 107 people. The survey results are presented in Figure 1.

Figure 1. Survey of the representatives of the academic and teaching staff of the NASBGSU on the awareness of the method of mind maps

It should be noted that there were instructors who called the method of mind maps the old Soviet method of signalling cards, which is absolutely

wrong. Considering that, the signalling cards imply the availability of ready-made information on paper, and the mind maps suggest the implementation of scientific search, creation of a variant of educational material.

In 2018, the NASBGSU hosted an All-Ukrainian Scientific and Practical Conference attended by representatives of various higher educational institutions. Participants' reports included topics on innovations into the educational process of higher education.

The experience of the lecturer from the Institute of Foreign Intelligence Service of Ukraine, who noted that 80% of the educational information was created on the basis of mind maps and also in the MindManager program, proved to be valuable for our research. An example of such material construction is presented in Figure 2.

Figure 2. Mind-map-based educational material of the Institute of Foreign Intelligence Service of Ukraine created in MindManager program.

Following this information, we decided to investigate which higher educational institutions in Ukraine were able to implement the method of mind maps in their educational process. All for the purpose of comparative analysis, since there are 12 educational institutions (academies, universities) in the system of higher military education. Figure 3 presents the key military educational institutions that implement the method of mind maps.

Figure 3. Military educational institutions of Ukraine, which implement the method of mind maps in the educational process.

Thus, only seven of the twelve higher military educational institutions, make use of the method of mind maps in their educational process. This fact indicates that innovation is slowly entering the system of higher military education.

4. Results of Research

Considering the importance of the method of mind maps in the educational process, the writing staff of the NASBGSU made an attempt to test it during the teaching of such humanities as “Political and Economic Systems” and “Economics of the Enterprise”, as well as “Logistic Support of Border Guard Units” to the cadets-border guards. Since there is no special curriculum at the academy, we had the following options for the experiment i.e. to create a mind map by a representative of the academic and teaching staff or to build a mind map on clean sheets of paper, using coloured pencils together with the cadets.

Examples of the maps created by instructors are given in Figures 4, 5 and 6.

Figure 4. Beginning of the mind map on the subject “Political and Economic Systems”, the topic World Economy.

Figure 4 shows the beginning of the mind map on the topic World Economy. The entire map on this topic is quite large and extensive in structure. This map tile presents an option concerning the highlighting of key categories from the topic and construction of the rest of the map therefrom.

Figure 5. A fragment of the mind map on the subject “Political and Economic Systems”, the topic World Economy.

An element of Figure 4 is highlighted in Figure 5. Hereof it can be seen that each category of the "concept of the world economy", "characteristics of the world economy" is attached with various supplements

in the form of links to web pages, test tasks, Word files with educational material, histogram images, and more. Each cadet has the opportunity to get acquainted with different types of information sources in the course of the material study.

Figure 6. Beginning of the mind map on the subject “Political and Economic Systems”, the topic Entrepreneurship in Ukraine.

Figure 6 presents a mind map tile on the topic "Entrepreneurship in Ukraine" designed according to the same principle as in the previous figures 4 and 5: the topic of the mind map is in the centre which also acts as a key concept with many-tentacled other concepts supported by related sources: browser links, tests, graphs, scientific publications, educational materials, and more.

We have provided only fragments of the examples of mind maps in order to avoid overloading the publication. The results of the cadets' surveys before and after using this method are more valuable research outcomes. It should be noted that the experiment was conducted under authority of the command of the Border Guard Service Academy and the relevant structural units with the execution of all necessary documents. Participants of the experiment i. e. the cadets were familiarized with the methodology and program of the experiment conduct and their research sampling (number) was formed on a voluntary basis. As the main methods of the experiment were in the form of interviewing, questionnaire, analysis of documents (paperworks, data reports concerning cadets performance, etc.) then there

was no unethical, psychological, or anti-moral influence upon the experiment participants.

The method of written questioning i.e. questionnaire has been applied to the cadets. The main questions of the questionnaire were:

1. Have you heard about the method of mind maps?
2. Has the mind maps method been used during the training sessions at the academy?
3. Is this training method suitable for you?
4. Do you think it was helpful to try using the method of mind maps when exploring a new topic?
5. Did you remember any innovations during your studies at the Academy of the State Border Guard Service of Ukraine?

The results of this survey showed that the cadets overwhelmingly appreciated the new method. The research sample consisted of 77 respondents (border guard cadets), these are three study groups (one group is related to the study of such subject as “Political and Economic Systems”, the second one the subject of “Economics of the Enterprise”, and the third group studied the subject named “Logistic Support of Border Guard Units”). The distribution of positive results (with the answer “yes”) is given by five questions of the questionnaire (see Fig. 7).

Figure 7. Results of cadets’ surveys on the use of the method of mind maps in the educational process

The results of the survey conducted with the cadets indicate the following: most people have never heard about or practically used the method of mind maps, minimal attempts to introduce the method are

positively accepted by the cadets and provide even successful dynamics of their learning indicators (gradebook assessments and actual level of knowledge), concerning innovations we can take note that the percentage of their use in the educational process of the academy is insignificant (25% of the respondents mentioned the presence of at least some innovations in the process of training).

In general, it is worth noting that the representatives of the academic and teaching staff face the problem of preparing a change in the educational paradigm, which in turn changes the approach to education as a whole. Every cadet (as well as a student in a civilian higher educational institution) has access to any educational information through information technology, and all sections, topics and textbooks are digitally available on the Internet. Therefore, education today seems like a subjective way of transferring information from an instructor to a cadet. The task of instructors, for the day, is to get cadets interested in carrying out scientific search of necessary knowledge (information). It is precisely the method of mind maps that is the appropriate solution to this problem.

5. Discussion

We can draw several conclusions on the basis of the conducted research: approaches to the future border guard officers training should be reviewed, we have to get rid of conservatism, focus efforts in border guard specialists training upon their critical thinking development, which is perceived by the Western education system as the basis of creativity, intelligence, out-of-the-box problems solution, etc. The difficulty and complexity of innovations in the Ukrainian higher military education system are that no innovation occurs without the approval of the authorities, since the State Border Guard Service, like the army, has its specific internal social hierarchy and patterns of functioning. This significantly hinders education reform, not all leaders have and are related to educational activities.

6. Conclusions

Our efforts to familiarize the representatives of the academic and teaching staff, and most importantly, the cadets, were minimal and fragmentary. However, even these efforts proved the importance of innovations and changes in the educational field of the Border Agency. In our opinion, innovative activities in the Border Guard Academy will not be rapid and easily perceived, but its gradualism is also a positive sign of reform processes in Ukraine.

The persuasiveness of European and North American experience in the use of the method of mind maps determines its active use in Ukraine.

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