PROBLEMS OF TEACHING MATHEMATICS AT COLLEGES OF HUMANITARIAN SPECIALTIES

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Abstract. In order to be clever, it isn't enough to be educated. The modern educational policy should be oriented on the challenges of the XXI century. It should be directed on formation of a new type of intelligence, new lifestyle and way of thinking, adapted to the rapidly changing realities of the world - the social, economic, technological, and informational. Searching for more perfect approaches to the training and education of learners require forming of the educational process so that creative abilities of each person could be implemented fully. The aim of the education is not only assimilation of a training material and enrichment of intelligence and moral and spiritual potential of the future specialist. Today professionally significant qualities of the personality are based not so much on criteria of volume and completeness of concrete knowledge, but on the ability independently to fill up them, to put and to solve professional tasks.

Keyword: educational process, quality of education, modern education, young generation.

Together with training purpose the methods and means of making it are being innovated partially. New approaches and views are being formed. The direction of democratic changes is requiring passing the changes to the individual from the paradigm of relations between society and individual. Teaching mathematics is directed to the development of general intellect and culture of a person, interests and ambitions of a learner.

However, to implement “revolutionary” task like reforming the instructional content drastically is causing difficulties. If mathematic science and any of its methodical and fundamental branches (logical, formal and operative, calculating and graphing, essential and applied) which have been formed since centuries are not taught, logical sequence and cohesion will not be ensured. Therefore, geometry of Euclid which was created in the century III B.C. and fractions invented by our scientists are taught.

The instructional content should be directed to develop not only knowledge, skills and qualifications of learners on a certain subject but also proficiency in choosing right way of emerging political and social situations, in thinking critically and analyzing flow of information, to educate an individual who can take a stand in life.

Therefore, it is necessary to develop the scientific bases of optimal choice of instructional content in continuous mathematics. Considering actual capacities of learners together with certain requirements of society in creating programs and textbooks is essential. To substantiate teaching each part scientifically the value of concept should be explained in this part. Additionally, the value of teaching mathematics gives opportunity to change contextual problems to folded formulae, to elaborate those using formal rules and to interpret their results. Nowadays it gives a chance of modeling which is one of the methods of being aware and learning the world.

The first criterion of success in teaching mathematics must be to reach certain level of mathematical culture of learners.

It must be verified that the course in mathematics at school was not formed and is not formed in purely deductive system but it is based on inconsistent thoughts. The world of mathematics tends to complexity from simplicity containing hierarchy of structures. These structures are formed deductively and there are some concepts on the base of certain theories related to mathematics. Concept is the form of thought, considering the main point of reality of objects other features are abstracted. Indeed, abstracting plays the main role in forming the concept.

This is why the concepts are taught in propaedeutics methodology of mathematics using concrete examples before teaching high-level abstract knowledge. Such phased learning gives opportunity to adopt
abstracted content which is the main feature of context of mathematics. Actually, mathematical concepts are remarkable with high level of their abstractness arising as a result of complex mental activity.

It is clear that one of the features of context of mathematics, i.e., the mathematical knowledge influence on each other, i.e., not knowing one part causes difficulty in learning the other part. Moreover, the sequence in stating teaching material on the basis of principle of connectedness, especially, logical cohesion of different parts of mathematics plays important role.

Actually, stating course of mathematics in primary school includes inductive method. Mostly demonstrativeness, i.e. improving calculating skills of learners using concrete examples based on pictures and models, having ideas on geometric figures and quantities are meant in this course. In addition, the elements of algebra and geometry are taught in propaedeutic. It is necessary to draw attention to connectedness in content as well as in method of stating during the change of primary education to secondary one.

Main method is narrative and deductive in stating instructional content in secondary school, and due to the features of teaching materials they are taught adequately with mental and deductive method in some themes. Keeping the measure is important in changing of induction to deduction, increase of deduction in stating the theme causes difficulties for learners.

In this direction elucidating the content of the course of mathematics which must be taught at school, stating main supportive concepts and stable ideas clearly, specifying the main tasks of the course of mathematics in each grade, to ensure connectedness and continuity of the course are of great importance.

In our opinion, the main objective in teaching the course of mathematics in secondary school should consist of acquiring skills like doing exercises on fractions (simple and decimal).

For this reason, ensuring connectedness of continuous mathematics has become one of the main functions of pedagogy. It must be stated that as a result of works (in 2001, 2004 and 2010) relative model plane and adequate textbooks are worked out. Still, the content of continuous mathematics has not been refined. Especially, it is essential to review and develop the programs at vocational colleges. Furthermore, developing adequate textbooks in accordance with programs of State Standards of Teaching is the demand of today.

Actually, instructional content of mathematics at school has been upgraded, modernized textbooks have been created.

In addition, during the formation of this program some repetitions are eliminated, however, serving as a bridge of repetition in strengthening the knowledge constantly and preparing for the next theme is not taken into account. Therefore, teaching the course of “Stereometry” directly is aimed. It is difficult to assimilate the course of stereometry for learners who do not have an idea of the course of planimetry. Also, only straight line and plane are given in the program, meanwhile, learning relative position of straight lines and planes, observing them in nature excites learners’ imagination.

In our opinion, it is reasonable to study of geometry in this way: relative position of straight lines in the space, relative position of straight lines and planes in the space, relative position of planes in the space. It is not necessary to present proof of some theorems in this case.

Ideas mentioned above concern teaching mathematics at colleges of humanitarian specialties.

It is evident that the knowledge acquired at schools, lyceums and colleges will be a foundation for continuing the study in higher education. But lack of preparation of learners in mathematics causes them difficulties in adaptation in higher education.

What methods are efficient in teaching developed content?

It is interactive methods and innovative technologies. Interactive methods like “Brainstorming”, “Insert” and “Cluster” are used in order to increase learners’ interest and activity. Results of survey carried out among the teachers show that many of them do not understand the whole point of using pedagogic technologies. Practically, the main teaching method is becoming illustrative and explanatory, leading teachers are using computers for illustration. What functions should a teacher perform to work in the way “mathematics is for all learners”?

It is obvious that there are current, midterm and final controls as well as independent works to monitor learners’ knowledge in the educational procedure of colleges. However, it is essential to state that the current control is less important at colleges. Focusing on current control and ensuring its coherence with the system of control at school is one of the main issues of monitoring learners’ knowledge. We suggest giving a 15-20 minute independent work.
Investigations show that the activity of learners during midterm exams and independent work increases, they ask more questions and try to solve the problems. The motive of increasing activity is to get good results, i.e., positive results of midterm. The main task of the teacher in this case is to intensify instructional and educational functions of exams taking advantage of such opportunities. Independent works are prepared according to the previous theme taking into account of the preparation of learners in class. In most cases, the results of these works help to identify how much the learner has worked independently and has done the homework.

Ensuring the coherence of teaching mathematics in the system of continuous education comprises coherence in themes, classes, stages. Strengthening connections not only in the content but also in teaching methods and forms, method of stating, reflection of concepts in symbols gives opportunity to enhance learners’ mathematic skills and qualifications, as well as, general learning skills.

Monitoring the practice requires reviewing and upgrading training programs of lyceums and vocational colleges. It is important to create new counter textbooks and to elaborate the textbooks created for vocational colleges on the basis of refined programs and standards of State education.

The following is noteworthy while teaching mathematics at vocational colleges (especially humanities): to motivate a new theme; to supply relationship among subjects; to use historical data; to teach it in relation to professional field; to observe learners’ knowledge frequently and in different forms. If these tasks are fulfilled, the problems in teaching mathematics will be settled partially.

References