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METHODOLOGY OF FULLY MASTERING THE BASICS OF MATH ANALYSIS

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Abstract
In this article, cadets study the technology of constructing mathematical concepts using the example of the process of constructing mathematical concepts.

Keywords. Rule, technology, result, expression, skill, knowledge, cadet, concept, object, process, education, full mastering, content.

Introduction

The authors of the fully mastering technology - American psychologists J.Carroll, B.Bloom and their followers consider as an initial assumption not the degree of cognizability of an object, but the degree of cognizability of the object for which it is intended.

J. Carroll believed that traditional education is the totality of all entities (all entities related to content), that is, what cannot be expressed as a regular expression, and what is not the result of this expression is not the result of this expression is not a consequence of this expression. He offers to select the result of education unchanged. Provided that this is done in accordance with the conditions established by the rules, in order to achieve the best results [1,2].

B.Bloom has learned the ability of the learners was learned in the process of teaching various subjects in conditions where the time to study the educational material was not limited. He classified the trainees into the following categories [3,4,1]:

1. Incompetent-those who cannot acquire the established level of knowledge and skills even when too much time is spent (about 5%).
2. Talented-those who study at a high pace (about 5%).
3. The majority are regular learners (around 90%), whose skills to acquire knowledge and skills are determined by the time it takes.

If we pay attention to the fact that in the vast majority (95%) of cases when it comes to fraud, we are talking about cashing out funds, then, most likely, we are talking about cashing out funds. [2].

To do this, it is important that the teacher has clearly developed the benchmark of the results of the complete mastery of the subject (section, subject) of the study by all learners. According to the full-fledged mastering technology, differences in the results of training can be reflected outside the requirements for the mandatory results of training. Within the framework of this technology, the organization of the educational process is aimed at a single, clearly defined level of acquisition of knowledge and skills of all cadets [2].

The problem of the formation of concepts has long attracted the attention of psychologists and teachers (L.S.Vigotsky [5], P.Ya.Galperin [6], V.V.Davidov [7], N.A.Menchinskaya [8]). In works related to the formation of concepts, authors often refer to mathematics.

Cadets study the concept, that is, they learn about its essence, but when confronted with real objects, they rely on certain symbols based on their direct experience. And, as a result, in practice, cadets, thanks to their experience working with objects, get the opportunity to pay increased attention to the qualities of objects. Thayer understands that this concept cannot be interpreted as a concept that cannot be interpreted as such. The cadet needs not only to express a mathematical concept, but also to give an idea of the objects and subjects that the cadet is getting to know.

The concept is a product of thinking, it reflects the real world, manifests itself as a means of communication in the process of perception. The concept is the result of knowing the true processes and phenomena, its conclusion.

The introduction of mathematical concepts is carried out on the basis of a concrete - inductive method, an abstract-deductive method. The main drawback in the introduction of concepts is the description of the concept with one, two specific examples, instead of taking into account all the important features of the concept. Such negligence leads to the fact that cadets mainly pay attention to non-essential signs of the concept. A good assimilation of important signs of the concept is facilitated by modifications of its non-essential, secondary signs. That is, it is not that the cadet memorizes the definition of the concept exactly verbatim, but that he can identify the important signs of this concept from the definition and, noting them, freely state the definition purposefully [2].

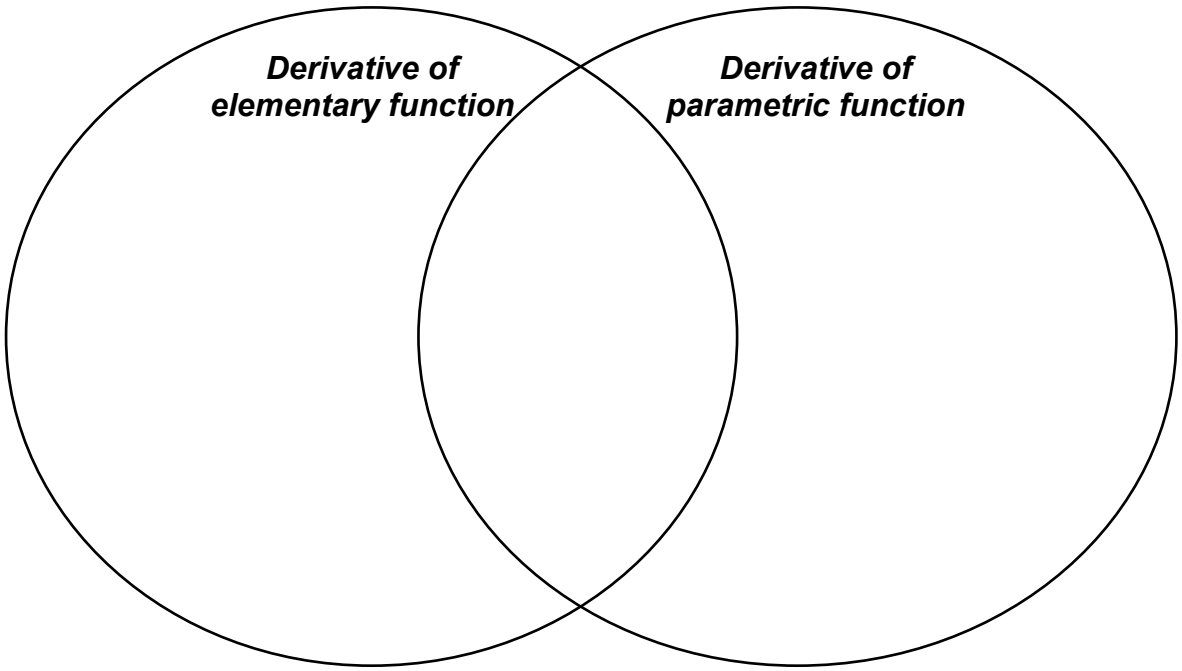
It is important to inform cadets that scientific concepts are changing: the definition of a concept is only one of the initial stages of its formation, after which the process of development of it continues - the gradual improvement and assimilation of the content and volume of the concept, its connections and connections with other concepts.

To successfully master certain concepts and form new things unknown to each subject, a system of necessary conditions and exercises is established, which depend on a number of factors: the complexity of the concept, the ability of cadets, their readiness for other subjects. The main criteria for mastering concepts include: completeness of mastering concepts (the amount of signs of the concept mastered by cadets), mastering the volume of concepts, fully mastering the relationship and connections of this concept with other concepts, using the concept in solving a particular class of issues, the ability to apply them in solving educational, cognitive and practical tasks that cover the active mental [Table 1].

Table 1Analysis of concepts

Concept	Analysis (What do I know?)
1. Derivative of function	
2. Geometric meaning of the derivative	
3. Mechanic meaning of the derivative	
4. Derivative of complex function	
5. Derivative of parametric function	

It is important to achieve that each concept is comprehensively, consciously and clearly mastered by cadets during training. The concept must be defined and repeated by cadets in practical training by repeating the definition (or description), giving examples that demonstrate the concept and clarify it, conducting logical analysis of the definition and other creative work, applying the concepts in judgments and conclusions (Table 2). Monitoring the appropriation of the concept is usually carried out in the form of a survey between cadets, in which, as a rule, it is required to cite examples not only ready-made, taken from the textbook, but also conceived by the cadet himself. This is a mandatory didactic requirement, which should become a methodological rule in teaching mathematics. Cadets must be aware of this and look for examples of newly introduced or repeated mathematical concepts in preparation for the task assigned to independent education.



2 Diagramm of Venna

This creative mental work develops the thinking of cadets and helps to consciously, deeply and constantly master the essence, content and volume of the concept, excluding its formal study, mechanical memorization of the definition.

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