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## Presentation of Logical bases of Teaching Materials in Textbooks

**Key words:** *didactic unit, teaching materials, generalization, concept, psychological, didactic, logical framework, textbook, curriculum, educational model, consistency, continuity, structure, supported scheme, the reference signals.*

**Annotation:** *this article reveals the peculiarities of teaching materials presented in the textbook, which is determined its value and point of concepts in terms of structure, also it is characterized and analysed by theoretical didactical and psychological approaches to the arrangement of educational materials.*

The teaching handbook - one of the main tool that supplements the textbook.

It is important that the content must necessarily be reflected by continuity and logical connection. During the process of working with didactic resources, students improve their skills by their experience of analysing teaching materials through critical approach, also they learn to express their thoughts, accomplish the attainments of their registration, and refer to the additional sources.

Textbooks and handbooks are considered as the information model of education with the features of original script and the panorama of the educational process. The textbooks and handbooks contains theory and methodology of training and education with the concepts of universal and national culture. This is because of educational literature contributes the formation of students' knowledge and skills by their intellectual, spiritual and moral development.

The consistent, generalized, compact presentation of educational information in accordance with the requirements of modern teaching - one of the most urgent tasks of pedagogy. Nowadays, there is a problem with the limitation of the enormous volume of information that is appropriate to include in textbooks. Therefore, many studies have examined issues of structuring educational information and educational materials for their learners to the presentations.

Moreover, there are investigations regarding the direction of assimilation of knowledge by their practical applications that creates models of complex and compact delivery of training materials. The presentation of knowledge in a concentric pattern through logic models and semantic relationships helps students learn the material more deeply. However, the implementation of this technology in the textbook - it is rather complicated.

The psycho-pedagogical studies developed some approaches regarding to the issues of representation of educational materials in the textbooks. For instance, educational materials

generalisation issues emphasised by the researchers such as D.Sh.Shodiev, R.G.Safarova, P.Musaev, U.K.Musaev, V.V.Davydov, D.B.Elkonin; there are some investigations in terms of aspects of didactic unities by P.M.Erdniev and regarding the problem of systematization of knowledge covered by D.Sh.Shodiev, R.G.Safarova, L.Ya.Zorina, A.V.Usova.

The National Encyclopaedia of Uzbekistan gives the following definition of "Generalization": "Generalization is one of the most important outcome of human mental activity relating with the knowledge and study of reality, facts, phenomena on the basis of similarities and differences, their interaction and association of ideas on this basis. Generalization - an important tool of scientific knowledge. "

Generalization occurs based on community. Foreign scientists characterize the concept of «community» as follows: "The commonality is the main form of scientific knowledge that carried out by source of theoretical thinking. The commonality is considered as a certain part of the conceptual instrument of "generalization".

Secondly, the "community" does not give a complete view of the object and the content is considered as a single-side knowledge.

Thirdly, the community acts in three ways:

- a) in the form of sensory-specific development concepts, ideas and feelings;
- b) as a result of abstraction and generalization;
- c) as idealized intentions.

As one of the major categories by expressing socialization, community aimed at composition a holistic view of the essence of objects and phenomena.

In order to understand this category, we will need to find an answer to the question: What should be the structure of the educational materials which is submitted on the basis of concentric by providing their full assimilation?

A.V.Usova and V.A.Belikov proposed the criteria of interdependent elements of the educational information:

1. The existence of a causal relationship between the elements.
2. The link between the basic concepts and their administration in accordance with the statement of the important parts (training units).
3. The establishment of stable functional connections.
4. Provide input sequence of interrelated elements.

The establishment of elements with causal and functional connections according to the linear principle performed sequentially, in other words that means from the general to the particular, from the secondary concepts - to the primary knowledge.

The placement of structured teaching materials based on the principle of concentric features has a series of didactic advantages. However A.I.Uman by exploring the organization of training materials and structuralization of knowledge in a variety of textbooks and manuals (even within the same subject), showed a discrepancy in the presentation of the same knowledge. Indeed, the assimilation of educational material on the same subject depends on the manner of how and in which system the material is presented in a particular textbook.

A.I.Uman concludes that if the structuralization of knowledge provided based on simple unities, then the task combined into blocks, which is carried incomplete and autonomous character. The

logical system is deficient in the placement of the blocks, for this reason the formation at their performance and skills obtained partially. Even if previously acquired knowledge is utilised and structuralization of educational material is more complex level based on the method of simple unities, then its didactic value will be lower.

If the structured training material based on the systematic principle, the learning process becomes more complicated. According to T.A.Stefanovskoy, based on this principle, the content of the educational material is presented in the form of chain links which is located at (or spiral) circle. Besides the fact that the chain links are logically interconnected and each of them is connected directly to the previous and subsequent. This structure imposes a certain burden on the students.

Training material containing analogical concepts, which is represented in all parts, do not contribute the formation of students' skills allocation the main essential characteristics. And students are placed in a situation where they themselves need to identify the main and secondary task. As a result, students have difficulties to assimilate an integrated system of knowledge, which is not have a clear idea of the relationship of educational material elements, and do not perceive the content of process complexity. This situation leads to the formal training or to the mechanical learning.

V.F.Shatalov thoroughly researched the study materials selection problem and, in particular, the logical structure of the educational text.

S.A.Lebedev, relying on the research and teaching experience, singled out the principle of the main bases of the teaching content. Such a basis he defined the set of issues, which is logically related to the theme, and the formation of reference summaries.

The pedagogy contains different approaches to the organization and educational materials in terms of structuring. V.F.Shatalov as a basis for the content highlighted "reference signals" and their multi-faceted aspects. He emphasised that the reference signals give efficiency for didactic system. At the same time, researcher mentioned that the reference signals having different pedagogical-psychological characteristics should not be repeated in the structure of the content.

There is question arises whether the student will be able to fully grasp the material by focusing on only on the reference signals and how the information is assimilated by this system is logically linked to other learning materials?

Along with the theory of "reference signals", V.F.Shatalov also explored issues of "basic scheme" structures, which have their own distinctive internals. "Reference notes - V.F.Shatalov wrote, is the logical exposition of educational material in the form of physical formulas, summary of findings illustrating the drawings, diagrams, etc. Reference abstract contains scientific arguments, concepts and laws, which explains each element of a single unit by generalized plan. Reference abstract is presented as a new distinctive didactic material ".

One of the option for changing the structure of teaching material is the selection of any part related by single entity.

The structural unit of the educational material can be generalized table or schema, which displayed different types of direct and indirect links of analogical and different concepts and phenomena.

When identifying and analyzing the study materials in their structure, the selection of the principle of reasonable systematization of knowledge inevitable clash of different positions and points of view. Thus, L.V.Zankov in his popular book of "Didactics and life" outlined the issues of systematic teaching and the example of the content of school subjects represented contradictions and inconsistency of didactic requirements. V.V.Davydov mentioned that the allocation of scientific knowledge in the teaching programmes should be determined by the logic of teaching discipline and interdependence of Intra subjects.

In terms of identification level of the concepts in the system of educational and scientific research knowledge A.V.Usova differ by clarity, consistency and validity. The author has defined a system of knowledge based on the logical-genetic analysis of the structure of scientific knowledge and allocate the basic structural components as follows:

- a) scientific arguments;
- b) concepts (for instance, the word, its characteristic, word with singular meaning, a multi-valued vocabulary);
- c) laws and regulations;
- g) theory;
- d) the degree of knowledge of the world scene.

The concept - the most important, logically marked signs of objects and phenomena that reflect their connections and relationships, creating for them a general idea.

A.V.Usova, R.G.Safarova, E.Goziev in their research thoroughly analyzed the concept of psychological and didactic aspects. The concept is one part of a system of knowledge, in a broader sense - a mandatory part of the scientific knowledge: study, law, theory - the concept as a whole too. Any theory, the law is based on scientific knowledge, which date back to the concepts in their sequence and interactions finds its expression in the vocabulary association. Therefore, every word is perceived as a certain concept.

L.Ya.Zorina justified a slightly different approach to the structure of scientific knowledge by the sequence of its elements. She analyzed with historical and logical point of view of teaching programmes and textbooks for physics for 100 years that gives scientists an opportunity to get an idea of the sequence of the introduction of scientific knowledge in the learning content. The objects of the analysis were: scientific evidences, theoretical patterns, practical knowledge, concepts and laws, theories.

The main condition for the stability of the textbook has been recognized by its didactic unity, namely, the selection and arrangement of educational material.

Based on the idea of introducing scientific knowledge and concepts in didactic system L.V.Zorina emphasized the important minimum level of selection for the sufficient to the scientific principles of the subject. This assimilation of the scientific foundations performs in the process of implementation of the principle of consistency and integrity.

As mentioned by L.Ya.Zorina, the theoretical foundations include important concepts, particularly important laws and results. In her opinion, the destruction integrity of the structure complicates accumulation of complex knowledge and makes the process of learning to memorize.

L.Ya.Zorinoy proposed criteria for filling didactic unities. They are as follows:

- Generalisation and the formation of the main independent laws, the identification of their minimum volume;
- Harmonizing the scope of scientific bases and the number of theoretically important laws;
- Recognition of the theoretical conclusions of an important part of the structure of the content;
- A reflection of the results of the main laws and additional knowledge;
- Ensure a minimum level of conclusion;
- Presentation of the summaries about the strength of majority of laws;
- Attracting comments and explanations to justify the theoretical laws;
- Selection of additional knowledge on the result of the findings, that is a reflection of the theory of integrity;
- The use of additional knowledge polytechnic orientation, expanding the overall outlook, enrich the perceptual knowledge, claiming common values;
- Attracting up to date information as an attachment to the theory of the field of modern and future technology and professional orientation of students, as well as materials that contribute to the formation of attitudes in the developing personality.

L.Ya.Zorina developed the idea of the integrity of the textbook in three areas: the link between theory and other parts, the relationship types of knowledge, Intersubjective link in the content of educational material. Thus, the theoretical part and the types of knowledge, directly or indirectly complement all the other components of the structure of the textbook. In particular, it highlighted six components: concept, law, scientific evidence, experiment, theory, practical knowledge.

G.I.Ruzavin has put forward several other requirements to the formation of educational material on the course of physics. He believes that the theory must absorb the rationale and results. In this regard, the researcher offered to provide the theoretical part of the logical structure, as reflected in the table, which would be located on a circle of scientific knowledge. During the research process, they identified the cycles of scientific knowledge and methods of assimilation.

Based on the cyclic presentation of educational material reveals the opportunity to show clear of knowledge mechanisms to implement the method of presentation of the problem and coordinate the logical and historical approaches in the perception of educational material. The importance of cyclic submission of material is that it becomes possible to form the scientific arguments through observation and special experiment. This explains the way to the nomination of a scientific hypothesis, defines the object of study and methods of implementation of the hypothesis. The mechanism and its components are recognized in a variety of teaching models. Modelling of the studied phenomena, processes and states and justification of hypotheses based on logical reasoning on which the findings are determined. Conclusions based on the results of the experiment. In the experiment, provides a set of new ideas, arguments that are either confirmed or not confirmed. Conclusion contains the findings on the legality of the hypothesis and the possibility of using experimentally tested a new experience.

The positions of the aforementioned researchers largely shared by A.Z.Zak, which developed recommendations for the authors of teaching programs, which had emphasized the need for the centralization of educational material about the fundamental theory. Scientists have proposed location of educational material in a spiral with the aim of theoretical generalization of knowledge and egress to the new level. In his opinion, such an arrangement contributes to the development of creative abilities of students and the formation of their creative thinking.

The feasibility of structuring theoretical material supported L.M.Fridman by stressing the importance of assimilation of theoretical knowledge and fundamental ideas.

V.N.Moshansky highlighted the implementation of the principle of experimental verification of scientific statements. He has developed a coherent logic of scientific experimental research.

This review of research on the problem of structuring the educational material, techniques and methods of its presentation and learning should be supplemented with analysis of the theory of integration of didactic unities. The last question requires particular consideration.