Quality Lifelong Education: Computer and/or a Textbook

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ABSTRACT The aim of this paper is to draw attention to the need to, and to the organization of the content in a modern textbook, which needs to be recoded. This paper observes the interactively functional textbook model that serves a purpose of permanent and applicable knowledge. However, there's a dilemma of *"computer and/or a textbook?"* and the only clear point is when it comes to high quality lifelong education, society does not need sole consumers of the information offered, but creative, independent, responsible, critical and self-critical, value-shaped beings. This study observed an interactive functional model of a textbook that is in a function of permanent and applicable knowledge, while at the same time it makes possible to realize teachers' roles in the process of learning/teaching. The introduction of information technology enters significant changes in learning and teaching, but it should be noted that the real situation in the society would retain the textbook and its function in the educational process.

INTRODUCTION

The need of modern education is reflected in how fast it arrives at efficient and permanent knowledge. However, at the threshold of the third millennium, the functioning of the education system is far from pedagogical efficiency. Relations of the pedagogical discourse, from the starting and initial principles to pedagogical implicit field, are branched and demanding, while each segment of that vertical must be devoid of superficiality and improvisation. The only path to a better future for education is to create new models, review the research methodology and develop long-term strategies. The introduction of information technology brings significant changes in teaching and learning, but it should be emphasized that the real situation will still continue to keep the textbook and its function in the educational process. Modern education is viewed through quality learning outcomes, and less through learning conditions.

The aim of this paper is to draw attention to the fact that the content in the modern textbook needs to be organized and recoded, since a linear presentation of the content cannot lead in the direction of durable and functional knowledge. This paper observes interactively functional textbook model that serves a purpose of permanent and applicable knowledge. However, there's a dilemma, that is the one about *"computer and/or a textbook?"* and the only clear point is when it comes to high quality lifelong education, society does not need sole consumers of the information offered, but creative, independent, responsible, critical and self-critical, value-shaped beings. Therefore, the focus of the present study is to show the possibility of a modern approach in creating textbooks, its implementation and role in contemporary education that is geared towards all ages and special educational needs.

Quality in Education

Ensuring quality in education means openness to ideas, different ways to solve problems, and the continuity in the process of self-education. Participation in the race to create a better educational image highlights the fact that the starting points are usually different and therefore require the maximum involvement of all the participants in the educational process. The requirement for high quality education is primarily a precise definition of goals and tasks, and at the same time, it presents the way for their realization. The aims and values cannot be contradictory. This priority task requires a positive orientation from the experiences of other countries, because the circular structure of the segments

of education must be open to novelties (Bogavac 1999).

When it comes to discussions and analysis of education, quality problem certainly represents one of the central issues. Category of the quality and its evaluation represents a very complex issue. This fact is confirmed by multimediality of the measure of quality.

Thus, the quality can be an attribute, and when talking about education, this implies an unspecified number of its characteristics. If, however, it represents "the degree of excellence or relative excellence" (Lewis and Smith 1998) that involves an assessment of the value of education in relation to other systems of education. If the quality of education is assesed at the level of "good or excellent", it means intuitive observation of the education components that are measurable.

Since there are different approaches to the notion of quality, one often encounters various discussions on the subject of education. Disagreement of individuals or groups in assessing the quality of education further indicates that it is a really complex problem that requires finding a solution that will fully meet the modern needs of education. On the way to achieving this goal, the most important, undoubtedly means, are all estimates, ranging from the general to the most specific.

Structure of a Textbook

The standards reflect defined objectives accurately. Standards are used to estimate the performance of structured education system. Monitoring the indicators of realization of objectives, and in particular, identifying problems that hinder their achievement, is also in a function of specifying standards. Work on the methodology in perfecting the standards must be a priority.

The structure concept represents a key problem in the theory of a textbook. In fact, without the structure (the term is taken from the logics) it is impossible to deal with the system. According to Sesic (1983), the system is a "structural and functional unity of both uniform and diverse elements, or special factors, creating this unity with its specific properties". Furthermore, the same researcher mentioned the factors found in each system, including "certain elements, for example, micro particles, atoms, cells and numbers, certain relationships and connections between

the elements or factors overall, components, and certain processes or operations that the system performs by certain laws" (Šešic 1983). So, from a logical point of view, there are three basic elements, which comprise the system.

The fact that the structure and the system should be viewed in solid unity is confirmed by the attitude of Zujev, when he states, "While accessing a textbook as a complex and complete system, we should bare in mind that the concrete content of a textbook is directly connected with its didactic function, which determines its structure" (Zujev 1988). From a didactic-methodical point of view, basic elements of the system (textbook as a system) are:

1. Relevant facts and concepts needed to be presented, given shape in a textbook.
2. Connections and relationships as an interactive functional dimension between the structural elements
3. Pedagogical and psychological requirements, didactic principles and laws of learning

These elements determine the macro and microstructure of textbooks. Structuring of a textbook must provide a "production system", which Baucal precisely defines as, "…The system of conditional actions such as "if...then..." Conditional action is made up of a part in which initial conditions are defined ("if" part) and a part in which an action (e), that is performed under given conditions, is defined ("then" part)" (Baucal 1998: 87). Thus, when structuring a textbook, it is not enough to know what people at a certain age are able to do, but what they can achieve in real conditions.

Interactive Dimension in Structuring Textbooks

A textbook with an emphasized interactive dimension provides closeness to the essence of the activity. Organized interactivity puts students in a position where they are not only engaged mentally while creating work habits, but it also helps them to establish their own system of communication activities, including processing the presented content, coming to a solution on the basis of given elements and evaluating the effectiveness of learning in education, which represents a unique form of interaction, roles of participants in education are divided and diverse, but they overlap. What are of special importance are the actual forms of participation in the process. Given that it is possible to talk about this

dimension in the narrow and broad sense, participation in the narrower sense is a process in which learners have the right to express their opinion, which needs to be heard, given due, and finally, be taken into consideration in all decisions affecting them (Pesic et al. 1999).

The textbook, which has an interactive dimension, enables a student to participate in relevant activities. This, of course, should be understood as a way to ensure adequate conditions for learning with understanding. A prerequisite for the development of the capacity for participation is the competence of students. It ensures that the student has no aversion, resistance to the acquisition of knowledge or the textbook that is one of the sources of knowledge. Every activity, in which a student does not see the meaning, is an alienated activity.

The basis of an interactive dimension is represented by the observation that can be directed to graphic and technical solutions of a textbook text (titles and subtitles that can be informative, problem-set and lyrically toned; font types: caps, italics, Garamond; punctuated sentences or parts of a basic text) and observation of instructions, questions, tasks and requirements. Being addressed by a writer in a second-person singular strengthens the communicative level. The forms of interaction are cause-and-effect, before and after, experience-opinion-attitude, and deepening the knowledge and feedback.

The amount of information should not exceed the capacity of students. Information in an interactive model has a network of structure and enables stable cognitive construct. The student is in a position to adopt facts, assembles them in a certain hierarchy and is able to compare those cognitive values with others. As shown in the schematic (Fig. 1), there are two nodal points in this model, that is, the system of concepts and the need for assimilating the knowledge. Modern education means that the student is not over-whelmed with the series of information, but should be familiarized with the ways of acquiring knowledge, in order to be able to analyze, conclude, compare, solve problems, and create new ideas.

Interactive dimension of a textbook has developed cognitive and motivational aspects. Interactive context provides a connection of different levels of information and multidirectional communication. The relation *author-information-context-student* ceases to be a rigid form that constrains communication.

Some of the ways to provide interactive dimension are:
1. Preparatory activities:
   - Collecting data from the literature, from the Internet
   - Observation of certain phenomena
   - Visiting museums and other institutions
   - Performing simple experiments
2. Activities > Incentives:
   - A reference to other sources
   - Providing guidelines on the use (for example, of the instrument, didactic materials)
   - Questions and tasks that are focused on the identification, description, argumentation, evaluation, ranking, comparison, analysis, synthesis, reasoning (execution of the rules and definitions)
   - Activities aimed at testing knowledge

When it comes to solving problems, one can refer to Flavel (according to Baucal), that "...on one hand, the inability to solve some type of a problem, because a child does not have the required processes, or certain processes do not have the necessary quality, and on the other hand, a situation where a child has all the necessary processes, but the solution is absent because the child did not include the necessary processes to solve a problem, or because a child did not
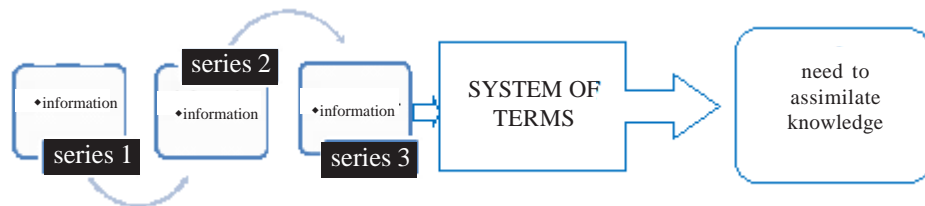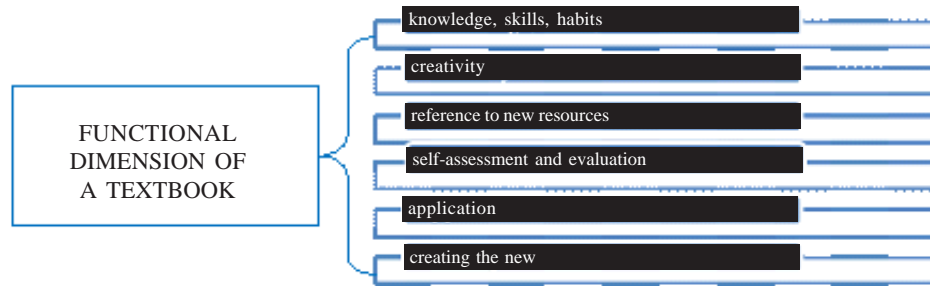

Fig. 1. Cognitive construct
Source: Author

Fig. 2. Functional dimension elements of a textbook
Source: Author

organize his/her own processes appropriately (metacognitive problem)" (Baucal 1998:159). Hence, it is necessary to take into account that in addition to basic elements, a task should offer a precise sequence of elements, stimulant (driving) elements that should be in a function of initiation and organization of the process.

Functional Dimension of the Textbook Structure

Form and function of a textbook structure must be set in such way that they primarily motivate students to learn. When the acquisition of knowledge and skills makes sense to students, the functional dimension requirements of a textbook can be met. Functional dimension has no linear form. Its components (Fig. 2) are intertwined. The combination of elements of this dimension depends on the content that is presented in the textbook.

The functional aspect of a textbook is provided if a textbook contains:
a) Field of stimulation
b)   If activities have a variety
c)   If the textbook structure is open (macro and microstructure in a clear and stable

unity on one hand, and flexible sequences in didactic units, on the other hand).

Stated, it could in fact determine the dynamic aspect of the process of acquiring knowledge.

Materialization of one of the dimensions, interactive or functional, does not guarantee the realization of pedagogical effects. Assumptions of the functional dimension are:
-    Age characteristics of students
-    Respect for the principle of cumulative content (reliance on previous knowledge and the horizontal and vertical correlation)
-    Developed interactive dimension.

Interactive functional model of a textbook, which is didactic and methodically shaped so that it respects reality, potentiality and intentionality of students' abilities, is aimed at achieving durable and functional knowledge and skills (Fig. 3). Intentionality is essentially focused on the goals and values in the future. What is particularly important to emphasize is the fact that a balance between motivation, abilities and aspirations should be achieved. Hence, the interactive functional model provides a multiplication of lines of communication and expands information channels. When the operational level of knowledge is reached, "students have a very
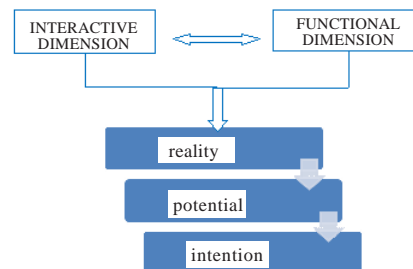

Fig. 3. Interactive functional model of a textbook respects the range of students possibilities
Source: Author

good command of the contents they learn, they are able to present them "their" way, explain them in detail and from different viewpoints and on various examples (not only those found in the sources), contents are used in proving and new solutions."

Functional interactive stratification, which encodes educational performance achieves qualitative construct: "Understanding a certain subject matter means, above all, thoughtful design of several facts and their relationships, understanding the essence of phenomena, processes, problems and their functional connections and relationships, identifying causes and effects, as well as their relationships, the relationship of content and form, elements and the whole, seeing relations on the line of general, special and individual, concrete and abstract" (Èanovic 1989: 13). Thus, the interactive functional model of a textbook implies:

- Avoiding repetitions and patterns
- Eliminating questions, tasks and requirements that have a formal activity as a result
- Unclear and imprecise formulations
- High level of communicativeness of a textbook's text

A modern textbook that covers interactive functional dimension comes from the narrative-linear framework, provides additional reference sources of interdisciplinary character and certainly provides a durable and functional knowledge to students.

Computer and/or a Textbook?

Internet and educational software offer hypertextuality, which largely represents a higher quality compared to the textbook as a printed medium. Thus, a student is in a position to be on the main discourse and use different levels of exercises at the same time, to obtain additional explanations, as well as be offered other and different sources of new information. Specifically, it is the students' choice to use data in order to deepen their knowledge at a specified time, which represents the vertical dimension, or to, however, use data in a function of expanding knowledge, which represents a horizontal dimension.

Educational software should have a multi-layer structure, where multiple segments of the activated content with a high degree of interdependence can be extracted. A student using educational software must be able to search for information, select it, and functionally organize and implement it using multiple strategies.

The software should incorporate specific simulations, made to successfully develop interest and logical thinking, problem solving skills in students. As a result, a student searches for information in a given problem situation, tries out ways of solving, analyzes causal connections and relationships, concludes.

Presentation of the main text should be followed by instructions and evaluative field. Special value of the software is in a feedback, which must be enriched with high quality animation, or alternatively, an interactive model of a game may be offered as a reward, in a function of the program content. Therefore, educational software is characterized by:

1. "Well-defined initial state,
2. Well-defined objectives,
3. Well-defined activities"(Hayes 1994)

If the segments are well "packed" they provide a high degree of motivation and hence, as a result, it becomes possible to satisfy the interests or current educational needs of children/students. Educational software provides a variety of modalities, such as visual, audio and practical, all in a function of acquiring and applying knowledge. Its use allows the adaptability and flexibility of learning.

Great value of such learning is that students are in a position to independently select and organize (use) information (content). It provides such dynamics, arousing children's/students' attention, interest and motivation for learning. By using educational software children meet a very important need, and that is the need to prove the value of their abilities. However, despite all the advantages that are presented, it is necessary to specify the shortcomings of the software in relation to the textbook as a printed media:

- Contents on the CD-ROM are not always easily accessible
- Activation and use require contemporary education technology that is changing rapidly
- A presumption of elementary computer literacy (of students and teachers)
- Problem of students' ability to assess what is relevant or irrelevant information

Of course, despite these shortcomings, it is necessary to continue to seriously work on quality educational software, which at this point, in combination with a modern concept textbook, really presents a rounded up construct.

Today, when one talks about the expansion of information technology, when there is a rapid flow of information, when a student must have more sensibility to the adoption of information that is presented in a new way and in new contexts, the concept of a textbook, following the contemporary moment, has to be seriously taken into account.

Lately, there is an occurrence that can be described as a phenomenon of the present moment, and that is the emergence of a large number of textbooks with the label "modern". *But, is a modern textbook the one dominated by dynamic illustrations and abundant in phrases such as "for curious", "interesting facts", which puts main discourse to a second plan, and finally the one having more attractive appearance?* Certainly, a contemporary textbook should involve much more. There are general and specific requirements, which a textbook should meet. The criteria for evaluating textbooks should be defined based on those requirements. Of course, it is not correct to claim that textbooks used in teaching currently are completely unsatisfactory. There are a number of problems, which certainly require some corrections.

Elements of a textbook must be functionally integrated. Each textbook, made for different subjects, as well as every type of a textbook, has its specifics. The peculiarities of different areas must be in unity, because this is the only way to realize the objectives and tasks of a subject. The textbook should provide the following:

-   That every element is in a function of another element,
-   Emphasizing, nodal points,
-   The ability to upgrade the elements (further logical development), and
-   Correlation.

Structural elements of the macro and micro level must be encoded with the contents that provide learning with understanding, application, creation of new ideas and training for self-education. Thus, the main function of a textbook should be engaging students' capacity on all these levels.

It is necessary to point out the importance of the writer of a textbook. The writer spontaneously projects his/her personality while developing a textbook, regardless of the strict respect of the scientific field he/she is dealing with and the limitations of certain corpus of scientific facts that require an appropriate terminology. Thus,

the above statement indicates that the author or team of authors, in addition to the great knowledge of the subject matter that needs to be transferred to the textbook form, must have a good knowledge of the language. Good knowledge of the language, in this case, means clear, very precise expression, with a high degree of conciseness of the textbook content presentation.

The use of a textbook is an active process. A well-structured textbook ensures that the student discovers, solves problems, concludes and respects the "rules of procedure" (ground rules) (Mercer 2006). It provides the possibility of a social reward (positive action in students).

Providing opportunity for students to cope with hypotheses and provocations (cognitive and perceptual) must be a priority task of a textbook. This activity is in a function of creative field and "it often happens that the initial idea suffers modifications and improvements. However, it is often the system of a "marble sculpture", it begins with a large piece of stone that is shaped in order to obtain a final product." (De Bono 2000). When structuring a textbook, it is also important that the author constantly bears in mind the question whether every offered discourse necessarily implies coming to conclusions or in turn, allows the execution of possible conclusions.

Specifically, it should be stressed that the road to successful problem solving lies in solving the tasks found in the textbook. Therefore, the choice of tasks by the author is a highly responsible work. It is very important to take account of how these tasks are formulated and appointed, because it happens that the "relevant stimulus is ignored because of the existence of another competitive task" (Goschke 1997, according to Lamberts and Shanks 1997).

A contemporary textbook or a textbook set needs to offer rich content developed through various forms of training students, while at the same time it should offer space for a variety of application methods, teaching methods/forms to teachers. This concentration of possibilities really fully determines the position of students and teachers. That is why it is very important to work on the operational function of a textbook.

A textbook should provide adequate expression of a child (cognitive, conative and emotional), circulation of personal experiences, rational effort, intellectual satisfaction, adequacy of linguistic expressions with a focus on the dynam-

ics of motives created on different levels, and cultivation of the students' personality and affirmation of values.

A contemporary textbook must direct students to reference sources that will provide an open system, which is characterized by an interdisciplinary dimension.

DISCUSSION

Lifelong learning has a very high priority in educational policies. In this context the most relevant definition for "lifelong learning" (LLL) is the one from European Commission (2001), which says that it is "all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competences within a personal, civic, social and/or employment-related perspective". This policy shift- broadly between quality as inputs to quality as outcomes- partly reflects the growing availability of (comparative) evidence on learning levels and disparities from an unprecedented number of international, regional and national assessments (Kamens and Benavot 2011; Kamens and McNeeley 2010).

With the emergence of the concept of quality education for all, the use of the term "inclusive education" increased. This term refers to the ability to provide a good education to the entire population regardless of age and of their differences. At international conferences on Education for All at Jomtien (1990) and later at Dakar (2000), the promotion of quality education and the satisfaction of basic learning needs were viewed as crucial aspects of international policy targets (Benavot 2011). Successful inclusion helps all participants in the educational process, primarily in developing positive attitudes towards people with special needs, which increases the possibility of establishing social principles based on equality and ensures the promotion of harmonious society as well (Kovacevic and Macesic-Petrovic 2012).

The issue of structuring and valuation of textbooks today is a topical one in the pedagogical and didactic sphere. The interest stems from the fact that the textbook, despite the presence of high educational technology, mandatory and normative schoolbook, is in demand for public use. The e-learning is not seen as a shift from the traditional to open learning, but rather as a support to conventional learning processes with the use of modern information technology and distance educational methods. Implementation of e-learning in educational institutions is the result of a process of convergence of distance and conventional education.

The textbooks play a significant role as they are considered the "primary vehicles for delivering content knowledge, for determining in large measure what goes on in a class" (Hummel 1998, cited in Lebrun and Lenoir and Laforest et al. 2002), and for assessing what students do and do not learn (Freeman and Porter 1989, cited in Oakes and Saunders 2004).

So, one is living in a time when classic textbooks cannot survive. The contemporary moment is evaluated according to the degree of flexibility the tutorial (there are children of different abilities), compatibility of its parts and the macro and micro level, the possibilities of using other sources, as well as an efficient self-service textbook. Interactive-functional model of textbook meets the educational needs of the contemporary moment. Today, when available, different sources of information, it is very important to the existence of textbooks whose content will be both pedagogically and didactically-methodically shaped, and technical-graphics resolved, that child is not intellectually provocative, inspiring, therefore, such that the child/the student uses with pleasure.

CONCLUSION

An interdisciplinary approach to the study of textbooks is absolutely essential because nowadays the concept of modernization and rationalization in teaching, insist on a creative personality that would have formed primarily ethical attitudes, and finally, figures that will be universally acceptable. Discrete or insufficiently integrated knowledge are not in use in creative personality. Systematic and continuous expansion and deepening of scientific knowledge should be the primary task of research in the theory of the textbook, which is the guarantee of quality of the entire educational process. The lack of continuity and systematic progress in the evaluation of the development of textbooks are as a result of failures of conception, didactic and methodical shaping, to the application.

RECOMMENDATIONS

* A good textbook offers what a child should learn, and is written in such a way that it should be a pleasure to use it.

- Offered contents must be moved to a new sphere, compared to the dry reproduction of life facts, a sphere that will be effectively challenging, full of creative impulses and that will leave room for the impression, as well as for the association.
- Interactive functional model of a textbook that is in a function of permanent and applicable knowledge, while at the same time it makes possible to realize teachers' roles in the process of learning/teaching.
- Internet and educational software offer hypertextuality, which largely represents the needed educational quality, much more than the use of only textbook as a printed medium.
- Children should not be only sole consumers of information provided, but creative, independent, responsible, critical and self-critical, value-shaped beings.

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