TOWARD A VYGOTSKIAN THEORY OF TEXTBOOK

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This paper is an attempt to place the problem of textbook theory into a new frame of reference provided by cultural-historical theory of development, using the idea about cultural-historical mediation of individual development and concept of CST as a basic analytical concepts.

The new frame of reference introduces a new language on textbooks, opening a range of new research problems, while dealing with the old ones in a new and more complex way. Textbook is shifted from the usual pedagogic-didactic setting and placed in a more basic and broader cultural context.

The paper is an attempt to bring the concept of cultural tools to a completely operational level, as well as to test the actual power of that concept by identifying CST in textbooks.

Furthermore, this paper is an attempt to elaborate the forms of social assistance that constitute the zone of proximal development, seen as the characteristics of joint activities of the child and a more competent participant (which is "hidden", i.e., indirectly present, in this case). Vygotsky never specified the forms of social assistance, but rather gave general prescriptions (Moll, 1990), thus presenting one of the central theoretical and practical tasks for the followers of his ideas.

**Key words**: cultural-historical theory of Vygotsky; cultural-supportive tools (CST); textbook; cultural mediation of development; textbook functions.

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TEXTBOOK AS AN INTERESTING OBJECT OF STUDY:
SHIFTING THE CLASSICAL APPROACH

This article is an attempt to postulate a Vygotskian theory of textbook. We proceeded from a cultural-historical conception of development emphasizing the socio-cultural mediation of the individual development.

Within cultural-historical theoretical frame of reference the textbook is treated as a cultural product having an important cultural mission. Two components of that cultural mission are of central interest: textbook’s formative influence on the individual development and textbook’s role in the cultural reproduction of society.

Textbooks present the samples of culture – samples of knowledge that competent adults in a certain culture have selected, classified and didactically shaped as organized systems of knowledge (Ivic, 1988). Furthermore, textbook itself is a powerful cultural tool that mediates and promotes: (a) thinking operations and intellectual activities, different in logical-psychological nature (b) adoption of many socially created techniques and strategies of intellectual functioning and behavior, (c) establishment of a "culture" of using textbooks and other socio-cultural sources of knowledge.

What is said regarding the general importance of textbook in individual development, particularly stands for this cultural context. In our country textbook is still almost an exclusive source of information, not only for students, but also for teachers who very much rely on textbook while organizing and carrying out the teaching process. The evaluation of knowledge is also based on them. Thus, textbooks actually postulate the models and standards of learning and intellectual activity within the educational context.²

To sum up, in our work, the textbook is treated as a powerful cultural tool and mediation of development is seen as one of its basic functions.

CONCEPT OF CULTURAL SUPPORTIVE TOOLS AS “FOUNDATION STONE” OF A PROPOSED THEORY

In our attempt to postulate a Vygotskian theory of textbook, the concept of cultural supportive tools (in further text CST) serves as a theoretical basis and as a basic analytical concept.

² Furthermore, for some children textbooks are the only books they have access to, and some findings suggest that the number of such children can not be neglected.
The concept of cultural tools has the central place in Vygotsky’s theory, since they are the means by which the process of cultural mediation of development proceeds. As Vygotsky pointed out in his formulation of the “general genetic law of cultural development” (Vygotsky, 1983) the role of CST in development is immense – they are the cultural support for development in the similar way the building material serve as a support for a house. CST exist as independent symbolic entities of an external world and then (by cultural mediation) they became constitutive elements of an emerging psychic structure too. In that sense, CST are the building material of development, i.e. its cultural infrastructure.

MAKING THE CONCEPT OF CST OPERABLE

In the work of Vygotsky, concept of CST has clear theoretical role, but not the level of operationalization necessary to be applied to the problems of textbook.

Thus, our first aim was to define more precisely the concept of CST and operationalize it to the level at which it can actually serve as an instrument for analysis of textbook pages. The following aim was to check the extent of actual power of that concept by recognizing CST in textbooks and by making the list and classification of textbook CST.

DISTINCTIVE CHARACTERISTICS OF CST

CST are those parts of cultural environment – primarily symbolic, simple or complex, that actually mediate between the culture and the individual. Since the development itself is multidimensional and complex process, the number, nature and forms of CST are extremely diverse.

The following characteristics should be taken as distinctive of cultural tools:
(1) They are communicable, i.e., culturally recognizable – they are created with an idea to be the mediators of cultural influence and, in this sense, they are representative of a culture.
(2) Due to their symbolic nature, they can be internalized and become constitutive elements of all higher mental functions.
(3) They can be defined by their developmental mission i.e. by the set of important developmental processes that they enable or support, also providing the very self-reproduction and development of culture.
FROM A WORKING LIST OF CST TO A THEORETICALLY BASED ONE

When we start from such determination of cultural tools than it is obvious that the textbook itself is one complex cultural tool in which multitude of more specific cultural tools are built in (by that it can be recognized as a genre). Diving into textbooks, we face the fact that everything which is written, drawn or marked in textbook may have a status of CST.

By analyzing, within another textbook research, the existing pages of domestic and foreign textbooks, with concept of CST as a basic unit of analysis, we came up to the working list of textbook CST. It includes numerous structural elements of textbook diverse by nature and complexity, such as: conventions on using textbooks and other kind of books, symbols and signs, meanings and senses of words, procedures and algorithms, content reviews and summaries, indexes, all forms of illustrations, graphical designing of different aspects of textbook, categories, variables, referent frames, etc.

There is no doubt that such empirical-inductive strategy may lead to the relatively rich and representative list of textbook CST. However, we’ve are confident that they have to be based on relevant theoretical knowledge from the three main reasons. First, however rich the existing textbooks offer may be, it is for sure poorer than the list including all possible CST that can be derived from relevant theoretical knowledge. Second, though CST are existing structural elements of textbooks, they are also the theoretical constructs and thus need a theoretical mediation to be recognized. Finally, only theory provides the full understanding of their functions, distant developmental goals and importance.

Therefore, by our opinion acceptable strategy is to:

1. derive relevant implications for textbook from certain basic psychological, pedagogical and discourse analysis researches;
2. synthesize them into the list of principles for designing textbooks;
3. derive concrete textbook structural elements by which those principles can be realized, and
4. transform that list into the list of textbook CST and integrate it with broader cultural mission of textbook i.e. functions of textbook and functions of culture.

3 We could, take for example, pagination of page which seems at first sight as a completely irrelevant mark. In fact, it is a form of regulation of one practical activity which shows that: review should move from the left to the right, that the review from the first to the last page is recommended, that eyes should move from the left to the right, that an idea of cumulating of knowledge is built into the book, etc...

4 We have analyzed the textbook pages from three subject areas (Serbian, mathematics, and science), and found some general and some subject specific cultural tools (Plut, 2000).
FROM BASIC KNOWLEDGE TO PRINCIPLES OF EDUCATIONAL DESIGNING OF TEXTBOOK

We believe that the most fruitful approach in defining principles of textbook educational designing is functional approach. This means that those principles actually are developmental, educational and communicative demands that are put in front of textbook.

Developmental demands refer to developmental possibilities as well as the developmental potentials and needs of textbook users. It is obvious that any serious textbook designing must take into account in the first place cognitive, but also conative and emotional characteristics of those to whom the textbook is addressed to. Beside, it is necessary to elaborate developmental needs by postulating what the aims and final achievements of development are.

Educational demands logically come from the fact that textbook has a clear educational purpose thus serving to efficient realization of set educational aims. Therefore, educational demands are based on systematization and elaboration of culturally recognized educational goals and on what is known about nature and conditions of meaningful and active learning.

Communicative demands come from the fact that the basic media of textbook is written discourse with all its characteristics, advantages and limitations. Therefore, textbook must satisfy certain principles (standards of textuality) that stand for written discourse in general and for this specific genre of text.

According to these starting assumption (concerning the nature of principles), we have chosen certain theoretical sources as a basis for deriving relevant implications on problems of textbook. For the brief insight, we shortly describe those sources:

1. Developmental psychology
   B. Piagetian conception of an active construction of knowledge: assimilative function of cognitive schemes, cognitive conflict and adaptation (Piaget and Inhelder, 1986; Flavell, 1985; Elkind, 1988).
   C. Information-processing approach: development of different cognitive, metacognitive functions and strategies, especially strategies of text
comprehension, role of knowledge base and representation and organization of knowledge (according to: Mavis Hatherington and Parke, 1986; McShine, 1991; Siegler, 1983; Bjorklund, 1983).

2. Cognitive psychology: types of knowledge, mental representations of knowledge, models of memory, processes of meaningful text understanding, (according to: Klausmeier 1985; Best, 1995; Sternberg, 1996; Woolfolk, 1998).


4. Discourse analysis: standards of textuality, the characteristics, advantages and limitations of written discourse, models of text productions and reception, conceptions of text coherence (Beaugrande and Dresler, 1981, Beaugrande, 1984, Bakhtin, 1980).

From this theoretical basis, it is possible to derive some implications relevant for textbook. As a result of their synthesis and generalization we can propose the list of principles for constructing textbooks that any educational designing of textbooks should respect⁵ (Pesic, 1998; Plut, 2000).

**FROM GENERAL PRINCIPLES TO STRUCTURAL ELEMENTS OF TEXTBOOK**

The next step could be a derivation of concrete structural elements (in further text SE) of textbook on the basis of identified principles. Principles of textbook designing, actually, are the desirable goals and derived SE are seen as means for achieving those goals. We understand SE as a material from which textbook is made.

Formally speaking, the largest number of textbook SE could be organized into several categories:

- codes
- visual-graphical means
- procedures and algorithms

⁵ Strict relations between these principals and concrete theoretical sources that served as a basis from which they were derived were not especially established. Because the same principle appears from different sources and vice versa, there are some principles that come from almost all consulted sources. The number of relations and crossings would make the picture confusing. It would be enough to state that all principles are closely related to described theoretical sources and that are mostly derived from them.
values, norms and rules
- standards and criteria
- models
- typologies and categories
- information
- sense and meanings of words.

The proposed SE list actually consists of two lists: (1) list of formal elements i.e. different forms of “packing” the content and textbook supplements (such as: dictionaries and indexes of concepts, advance organizers, paragraphs, introductions and reviews, illustrations...) and (2) list of content elements including all items defined by their content which thus can be recognized only if we take their meaning into account (such as: introductory problems, models of problem solving, explanations and elaborations, classifications, making relations of different kinds, confronting the opposite conceptions...).

An illustration: One of the principle suggests that textbook needs to provide relevant knowledge and experience that can serve as "anchoring" base for new learning. Content structural elements that realize this function may be: relating problems with spontaneous, every-day life knowledge and experience, summarizing the relevant school knowledge previously adopted, integrative conceptual scheme that serve as assimilative base, hierarchical pattern in organizing the textbook content (presenting some general concepts and ideas of a great integrative and explanatory power first and than progressively introducing more specific ones)... Formally speaking, this can be done by different structural elements such as remainders, schemas, tables, tasks in the introductory part of a lesson, advance organizers, referring to units of material that need to be repeated...

FOCUSING THE TEXTBOOK’S CULTURAL MISSION - CHALLENGE OF INTEGRATION

A final task in our effort to theoretically based textbook as a genre within the sociocultural framework, is to make an integration of SE list with the concept of CST and the cultural mission of textbook.

Transforming SE into textbook’s CST

What serves as a bridge in that integration is the determination of CST functions.
From the given definition of CST, it is obvious that their primary function is mediating the individual development, while their importance for the culture is in a second plan. Therefore, the CST functions should be defined in respect of their developmental relevance. More precisely, we have to determine the CST functions on the basis of what we see as the global developmental aims, final developmental achievements, especially regarding cognitive and metacognitive development (Plut, 2000).

Starting from such a list of developmental aims, we can identify CST functions as establishing and developing of key development processes.

1. **Coding of cultural material** – adoption of symbolic codes and transformation as building material for mental functioning

2. **Improving power of some psychical functions** – strength, speed and efficiency

3. **Establishment and stabilization of new mental and practical capabilities** – enlarging the number of intellectuals tools and operations, different abilities, competencies, skills and strategies

4. **Organizing and structuring of mental contents** – orientations off all kinds, relating of different psychical functions, arrangement and classification of an old knowledge and experiences, establishment of assimilative schemas and storing of a new knowledge

5. **Regulation and control over the mental processes** – setting the criteria of successfulness, achievement and self-evaluation, modeling of behavior, establishment of evaluative-normative system, consciences awareness and voluntary control over mental processes

The next step in integration could be the transformation of SE list into the list of textbook CST. From the point of cultural-historical theory, SE of textbooks actually are its CST. What do we then get from such transformation? How does it contribute to the final aim, i.e. cultural basing of a textbook theory?

We would, in fact, put the same facts into new interpretative framework. Deriving SE from relevant theoretical basis, no matter how this list is representative, useful and well theoretically based, belongs to the usual study of textbook. However, within new context provided by the functions of CST, structural elements of textbook are getting different names and functions moved to developmental goals. In other words, new theoretical framing sharpens their functions and focuses distant developmental aims.

### Relating CST with functions of textbook and culture

Furthermore, the list of CST should be related with functions of textbook, as it is conceptualized from the angle of cultural-historical theory (i.e. as the tool of mediating individual development and cultural reproduction). In that way, each SE is related not only to specific CST
functions, but also more globally with concrete function of textbook (Plut, 2000). In other words, each structural component of textbook should have an explicated, sharpen and theoretically based purpose as a tool or “brick” of development.

Relating SE with CST and furthermore with functions of textbook, opens the path for basing the study of textbook in a much broader, cultural context. As it can be assumed, the final step in such a synthesis was relating of SE, textbook CST and textbook with the functions of culture (Plut, 2000). Textbook is a cultural product that, in the end, serves to a cultural reproduction, survival of certain cultural system. It can be questioned if determination the CST function in respect of individual development goals neglects their cultural mission. The answer is no, because their cultural mission is fulfilled exactly through the individual-developmental one. By supporting the individual development, they, at the same time, take part in a cultural reproduction of community. Development of individuals and development of culture are, in essence, the parts of the same developmental program. Individual development is not possible without cultural mediation, and models of culture cannot be kept and reproduced aside from cultural genesis of individuals who make that community.

To resume, through this kind of synthesis, the new theoretical framing is brought up into the usual study of textbook. Classical facts can be reconsidered in a different perspective of a problem, and with different language of speaking. Textbook CST and its function become the basic elements of the theory of textbook as we see it, and also theoretical basis for the study of textbook in terms of its cultural mission.

CRITICAL POTENTIAL OF THE CST CONCEPT

Theory of the textbook conceptualized in the way that takes the concept of cultural tools as its central instrument, opens many problems that classical pedagogic approach did not take into account. On the other side, it meets some old, ever challenging questions in a differently focused and conceptualized way.

One of these question is: do CST posses critical potential? Can any kind of evaluation be based on the concept of CST? Is it possible to classify CST according to their validity? Are there good and bad cultural tools (i.e. worse and better ones)? What would be bad cultural tools and how should the possible analysis of their dysfunction look like?

6 Technically speaking, in the final list (which is central to all relating and integration), each SE has marked function that it realizes as a CST, and also a marked function of textbook that it is related to.
The concept of cultural tools has inherent positive connotation ensuing from Promethean optimism of complete Vygotsky’s theory. All Vygotskians are completely open to the bright side of a cultural influence, fascinated with the miracle of cultural genesis of a human being (reservations in this respect were presented by Ivic, 1996 and Pesic and Bucal, 1996). But, the other, “dark” side of cultural influence cannot be avoided. Culture also has some restrictive functions (by controlling and directing, it also narrows the wide range of developmental possibilities to those ones that are culturally recognized, accepted) and even destructive functions (not orienting but disorienting, not regulative but disintegrative, bringing chaos instead of order and structure, disturbing, restricting or even destroying the developmental potentials).  

However, this aspect of culture is not built into the concept of CST in a recognizable way - it is unquestionable positive concept. Can we then use it to discriminate good from bad educational (or, broader, cultural) solution? In our case, is it possible to base a critical analysis of textbook on this concept? In order to check that, we have made some exemplar analysis in which we tried to describe some textbook solutions recognized as “bad” (i.e. inadequate in different ways) by us or other authors who used classical pedagogical frame and vocabulary (Plut, 2000).

These analyses have convincingly shown that concept of CST can successfully meet this kind of problem, by providing subtle, elaborated and well based discrimination between good and bad solutions. By using different language of speaking and theoretical framing, they clearly pointed out what the problems, defects and forms of negative affects of bad textbook solutions are.

CST are dysfunctional if: (a) they are missed where they should be; (b) there are too many of them (thus they mutually disturb or even cancel their effects) and (c) they are inadequate in different ways. Parallel with list of CST functions, we may identify different forms of their dysfunction. Some of them are presented as an illustration:

- Relations between information, concepts, principles, theories are either nonexplicated or partial, superficial, unelaborated and withdrawn from the broader context. This leads to the loss of motivation, adoption of quasi-concepts and nonmeaningful verbatim learning.
- Previously established developmental achievements are not practiced, thus remaining unstable and nonoperable.
- There are certain attempts of making the nets of knowledge, but they cannot serve as serious assimilative schemas, since they are partial,

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7 We refer to negative effects of certain micro, mezo, and even macro cultural settings, such as: destroyed family, poverty, multidimensional social crisis, some traditional patterns that certain functions of growing up. ..
superficial, too simple (that children have overgrown) or too abstract and complex (and thus difficult for children).

- Set demands and tasks are often unclear and meaningless – instructions and questions thus produce dispersion of attention, loss of motivation, and blocking instead of directing activity.
- Spontaneous, everyday-life knowledge and experiences are either not evoked at all or if evoked, are not adequately related with abstract and decontextualized school knowledge thus not properly used as their empirical basis.

Related to what was discussed above is “the mystery of the bad textbook”? How does bad textbook function and what its developmental effects are? How is it possible that even bad textbooks have some positive effects on the development of the child? This is the problem that has long been the concern of this research team. The answer lies in cultural tools. The cultural tools are far more thorough means than the proclaimed aims of the textbooks. They take effect at the deeper level and represent serious cultural instruments that also have profound formative effects. The bad textbook obstructs this function of cultural tools but cannot cancel it completely.

REFERENCES


REZIME

KA JEDNOJ VIGOTSKIJANSKOJ TEORIJI UDŽBENIKA

Dijana Plut i Jelena Pešić

U ovom radu razmatramo elemente i procedure za zasnivanje jedne moguće teorije udžbenika. Osnovne postavke teorije Vigotskog vidimo kao temelje teorije udžbenika. Razmatramo heurističku moć teorijskih ideja Vigotskog kao i moguće pravci elaboracije i operacionalizacije njenih osnovnih postavki.

U radovima Vigotskog razvijena je osnovna sociokonstruktivistička ideja, ali on nije stigao da razvije tu ideju do nivoa koji bi bio dovoljno operativan za razne upotrebe. To tretiramo kao izazov. Ovaj rad je pokušaj da se skiciraju mogući pravci operacionalizacije osnovnih postavki Vigotskog.


Relevantnim disciplinama smatramo razvojnu psihologiju, kognitivnu psihologiju, pedagošku psihologiju i savremene analize diskursa. U radu kratko specifikujemo po čemu su te discipline relevantne za moguću teoriju udžbenika. Iz svih tih bazičnih disciplina moguće je izvesti implikacije za konstrukciju udžbenika i strukturne elemente koji čine dobro oblikovan udžbenik. Strukturne elemente je moguće po formi koju imaju razvrstati u 9 kategorija (u radu navodimo koje su to kategorije).

Kakva je, dalje, veza između strukturnih elemenata udžbenika i kulturno-potpornih sredstava? Strukturni elementi udžbenika su , u stvari, KPSovi ugrađeni u udžbenike. Kako to možemo znati? Po njihovoj osnovnoj
funkciji! U radu definišemo te osnovne funkcije i strukturnih elemenata udžbenika i KPSova uopšte. Kroz razmatranje tih funkcija vraćamo se i osnovnim individualno psihološkim i kulturnim funkcijama udžbenika.

Na kraju razmatramo kritički potencijal koncepta KPS. Ovaj koncept iz svog marksističkog porekla vuče ideju o pozitivnom uticaju sredine na razvoj. Da li je moguće držeći se koncepta KPS razlikovati dobar od lošeg udžbenika. U radu navodimo nekoliko ideja kako je to moguće učiniti.