

THE ASSESSMENT DISCOURSE OF TEACHERS' TEXTBOOKS IN PRIMARY SCHOOL MATHEMATICS

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Considering language as discourse, this chapter attempts to analyze the assessment discourse of mathematics supplement textbooks for teachers. Official texts of curricula are examined focusing on assessment in primary school mathematics. Our analysis shows similarities in characteristics of textbooks' language and to discourses their producers appeal for their positions' justification, as inconsistency and ambiguities within the official discourse, which make obvious that positions and practices should be submitted to scrutiny and clarification and that teachers' training programs on alternative assessment methods should be planned.

INTRODUCTION

This study adopts the theoretical premises of Halliday (1985) as well as Critical Discourse Analysis (C.D.A.) by Fairclough (1989, 1995) and Kress (1989) and aims to investigate the picture of assessment constructed within the discourse of mathematics textbooks supplement for teachers, as well as the role assigned to the teacher. The picture of assessment thus constructed is examined with regard to the meaning attributed to it, the functions and purposes it serves, the forms and criteria highlighted. The language features of texts that contribute to it is also examined.

In order to comprehend the texts of mathematics textbooks supplement for teachers it is necessary to examine the frame of discourse within which those texts are produced (Fairclough, 1989). In our study due to the limitations of the proceedings we only consider the official texts of curricula currently in effect related to assessment in education focusing on mathematics at primary school.

Also the ways in which the producers of the texts justify their positions and practices they highlight and any tensions within the official discourse are considered.

UNIFIED INTEGRATED CURRICULUM (U.I.C.) AND MATHEMATICS CURRICULUM

The writing of mathematics schoolbooks, texts of which are analyzed is based on the Unified Integrated Curriculum and Mathematics Curriculum (U.I.C., 2002).

As editors argue, the Unified Integrated Curriculum (U.I.C.) is an attempt of united planning of educational system which aims to contribute to the development of student's personality and to his/her harmonious integration to the society. It highlights the need for a more essential connection between school education and the work market, the need for connection between knowledge and daily life and it proposes the thematic teaching approach. As regards assessment of student a definition is not given in U.I.C., but basic principles and its characteristics are

referred (U.I.C., p. 18): the assessment is continuous and purposeful, concerns not only the acquisition of knowledge but also the acquisition of skilfulnesses, the formation of attitudes, values and behaviour, and presupposes criteria and objectives which are specific and clear. Assessment has to be characterized by transparency, reliability, validity and objectivity. It has also take into account the particular needs of each student and their personal way of learning. The student has to be involved in the process of assessment so that to acquire skilfulnesses of self-assessment.

The main purpose of student's assessment, as it is defined by U.I.C. is the feedback of teaching and the detection of learning gaps for the purpose of the improvement in school education and the progress of student. According to U.I.C. the assessment contributes to the satisfaction of students' needs, the development of his/her cognitive and meta-cognitive skilfulnesses. The strengthening of learning motives constitutes also a great objective of teaching and assessment. The pedagogic function of assessment is dissociated from the selective function and the descriptive assessment is highlighted especially for the first classes in primary school. The descriptive assessment is proposed to be combined with traditional numerical assessment in last classes.

The assessment is related directly with the objectives of teaching and learning and for this reason we consider necessary to mention the objectives of teaching as they defined by the mathematics curriculum (U.I.C., p. 311): The acquisition of basic knowledge and skilfulnesses, the development of mathematic language as important mean of communication, the understanding of basic mathematic methods, the acquaintance with the process of reasoning and prove, the development of solving problem ability, the understanding of historical dimension of mathematic science and the formation of positive attitude to mathematics are highlighted as essential objectives of mathematics teaching. According to the new mathematics curriculum the teaching approach owes to rely on principles of constructivism and discovering-investigative learning. It proposes the thematic teaching approach and the team-work teaching. It puts emphasis on procedures of learning and not only on its product. This position is justified to modern views about mathematics teaching and learning. According to these views "mathematics is the product and the activity through which the result is produced." (U.I.C., p. 367).

Examining the official discourse of assessment in curricula currently in effect in Greece, we notice that there is an agreement between official discourse and researchers' discourse regarding the pedagogical dimension of assessment and its objectives.

The forms of assessment that are highlighted in the U.I.C. are: diagnostic, formative and summative assessment. Pedagogical function of assessment is strengthened with a great variety of assessment methods among which are proposed: Written and oral close and open-ended questions, semi-structured dialogue, projects, systematic observation, portfolio, self-assessment, peer-assessment, combination of different

methods not only do they aim to effective detection of knowledge acquired, but to the ability of knowledge management and application too. Official texts draw on the researchers' discourse to justify their positions, yet at the same time considerable tension is apparent in educational policy about assessment.

Today in the assessment system for the primary school in Greece, the numerical assessment coexists with the descriptive assessment. These forms of assessment contradict each other, since the descriptive assessment clearly has pedagogical aims and is linked to the individual norm-referenced assessment and individual-specific teaching, whilst the numerical assessment grades and categorises students and follows the classroom norm promoting comparison and competition.

An other contradiction is the fact that today, though descriptive assessment is legislated for all classes of Greek primary school it isn't applied by teachers in practice.

With regard to the descriptive assessment and the alternative methods of assessment which the official texts suggest, explicit instructions to teachers on how to apply them in practice are not provided. With regard the criteria of assessment official texts give a hint, but do not provide explicit instructions on which criteria and how to use them.

Considering fundamental principles of assessment in the U.I.C., according to which "assessment of students not only concerns knowledge that has been acquired, but also the acquaintance of skillfulnesses, the formation of attitudes, values and behaviors" (U.I.C., p. 18) we see contradictions when consider the aims of mathematics curriculum that seem to concern mostly the field of knowledge.

For materialization of curriculum objectives printed educational material is used which consists of a Book for the Student, a Copybook for the Student and a Supplement Textbook for the Teacher. The Book for the Student beyond the texts of cognitive content of subject includes work-sheets related to the subject of each unit. The Copybook for the Student includes work-sheets for practice and aims to an extensive and in-depth knowledge of each unit. The Supplement Textbook for the Teacher includes extensive directions about the didactic methodology, a teaching timetable of each unit, suggested activities, the required material and instructions about the assessment.

The U.I.C. highlights as priority of education the provision of equal opportunities and possibilities of learning for all students having as ulterior purpose the bluntness of social inequalities and the maintenance of social cohesion (U.I.C., p. 7). For all that, today there is one and unique schoolbook for each subject and an undifferentiated curriculum for all Greek students, despite the fact that the Law has established the introduction of more than one schoolbook (N.2525/97) in whatever subject it is considered as necessary. It worths mentioning that the schoolbooks which are based on the U.I.C. are used in the classroom during the second school year.

METHODOLOGY

We considered the texts of teachers' textbook supplement for mathematics that relate to assessment.

A method based on Halliday's "Functional Grammar" (Halliday, 1985) and on the interpretative techniques of Fairclough's Critical Discourse Analysis (Fairclough 1992, 1989, Kress, 1989, Hodge & Kress, 1993) was used to analyse these official texts. Thus characteristics of the texts' language were examined and the functions - "ideational", "interpersonal" and "textual" - (Halliday, 1973) that they carry for the speaker/author and the reader/listener were interpreted.

The "ideational" aspects of texts to be analysed relate to the picture constructed for mathematics assessment. They were analysed primarily through the examination of types of processes (Halliday, 1985, pp. 101-131) that take place in the discourses under examination and are related to the task of assessment, the type of logical subjects, ie the human or inanimate actors of these processes (*ibid*, pp. 32-37). The presence of a human being in a text or the absence thereof, and the use of inanimate abstract nouns as actors of the processes, was examined via the use of passive voice and nominalisations that relate to social and ideological aspects of language (Fairclough, 1989, 1992, Hodge & Kress, 1993).

The teacher's role constructed for the task of assessment, the relationship between writer and reader and the degree of the teacher's autonomy concerns the "interpersonal" function of language. It was analysed through the use of personal pronouns, modes and the text's modality (Halliday, 1985, p. 86; Fairclough, 1989, p. 129; 1992, p. 159 on modality, and Kress, 1989, on their interpretation).

The structure of official texts as a whole and the type of text that are related to the "textual" function were examined through the type of "themes" (Halliday, 1985) that dominate the text.

Drawing on the theory of C.D.A. by Fairclough, "member resources" were also examined which the producers of texts draw on, in order to justify their positions and practices.

THE DISCOURSE OF TEACHERS' TEXTBOOKS FOR ASSESSMENT IN MATHEMATICS

Today's teachers' textbooks report on assessment in separate chapter in opposition to previous ones that mentioned to assessment in few paragraphs. Thus new textbooks lay greater weight on assessment. Basic instructive principles that previews textbooks proposed (emphasis on problem solving, need for learning to be connected with real situations of daily life, need of respect for the individuality of a child and adaptation to characteristics of class and type of school, stress on processes of learning and not only on its product, active participation of student in correction of his/her written work's errors) are maintained in new mathematics textbooks. In addition alternative

methods of assessment are introduced and particular emphasis is laid on handling and turning to account of error in order that children acquire metagnostic abilities, “learn how to learn”.

The analysis of its discourse showed not only similarities but also differences with regard to the picture of assessment that is constructed within the texts of teachers’ mathematics textbooks for all classes in primary school[1].

The definition of assessment’s notion isn’t given in textbooks, but the nature of assessment is defined implicitly through its purposes, functions and characteristics. In texts it is noticed unanimity with the discourse of researchers as to notion and purposes of assessment that make it necessary. The purposes of assessment are diagnosis of students’ needs (diagnostic function) and feedback of teaching (feedback function). That is, its purpose is the advance of knowledge and “not performance” (Mathematics for Primary School, Textbook Supplement for Teacher, B’ class, p. 19). Thereby, its character is considered clearly pedagogic.

As regards the basic principles of assessment, some of them which are pointed out in the U.I.C., are stressed in new textbooks:

Assessment doesn’t concern only knowledge but also skillfulness... (Mathematics for Primary School, Textbook Supplement for Teacher, B’ class, p. 15)

...the sheet of assessment relies on the objectives of each unit and on particular needs of students...students are involved in the assessment process” (Mathematics for Primary School, Textbooks Supplement for Teacher, E’ class, p. 17)

assessment constitutes part of daily school work (Mathematics for Primary School, Textbook Supplement for Teacher, A’ class, p. 163).

Regarding the criteria of assessment only in the textbook of F’ class is mentioned that criteria of assessment are mainly the interest and effort that a student makes not the result. As it is mentioned the above criteria must be acknowledged to the students.

As for the forms of assessment formative and summative are mainly highlighted. After the analysis of students’ errors in revising tests at the end of each period remedial teaching is proposed. As for the initial diagnostic assessment only the textbooks for B’ and E’ classes (products of the same team of authorship) make an indirect reference to it by the statement:

The teacher doesn’t wait for revisioning chapters to discover the children who have difficulties or gaps...doesn’t go to the next lesson if children don’t have prerequisite knowledge and skillfulness... The teacher finds out if the children have prerequisite knowledge and skillfulness through assessment in order to go to the next lesson. (Mathematics for Primary School, Textbook Supplement for Teacher, B’ class, p. 15)

In addition the textbook for D’ class specifies the basic knowledge which is necessary for working out of the new chapter. This knowledge is checked by the

teacher with one or more questions or activities which are cited at the beginning of the chapter in the Book for the Student.

As far as the methods of assessment is concerned the consideration of the texts showed that given information about assessment mainly concerns the revising tests of assessment included in the teacher's textbook and the way of their correction. More concretely textbooks for A' and C' classes (products of the same team of authorship) focus to the revising test for each period and to the scale of objectives and notions as well as to the way of their use. The scale of objectives and notions is suggested to be used: 1. by the teacher during the teaching to observe students' behaviors and ascertain to what extent they comprehend taught notions. 2. by students for self assessment and peer assessment. (Mathematics for Primary School, Textbook Supplement for Teacher, A' class, p. 163). In textbooks for B' and E' classes, as it is pointed out, self assessment and peer assessment are realized in the context of revising chapters and "constitute basic elements of students' assessment" (Mathematics for Primary School, Textbook Supplement for Teacher, B' class, p. 15). In addition in the textbook for D' class the two paragraphs which refer to assessment concern the use of assessment's sheets in the textbook at the end of each period, as well as the form of self assessment and peer assessment on teams work and the form of teacher's self assessment. Alternative methods of assessment that are highlighted in the U.I.C. such as portfolio are not highlighted in teachers' textbooks except in the textbook for F' class. In this book, though various methods are described (not formal methods: oral questions and answers of students, observation of team-working by the teacher, formal methods: written questions, exercises, problems in the Copybook for the Student and revising tests, projects and portfolio) their use is canceled by the statement:

Generally assessment is conceptualized in two levels: In a daily basis formative assessment takes place...which is applied during the teaching through the "Questions for self control and discussion"... In a second level, at the end of each unit, summative assessment takes place through the test...The results from the two levels of assessment will be useful for students' assessment as well as teaching assessment and schoolbook's assessment generally ...(Mathematics for Primary School, Textbook Supplement for Teacher, F class, p. 14)

Specific questions for not formal methods by which the teacher gathers information about what a student has learned are concluded in the Book for the Student. They are the "Questions for self control and discussion". (Mathematics for Primary School, Textbook Supplement for Teacher, F' class, p. 15)

In the above statement assessment seems to be faced as a process not continuous but broken away from the remaining educational processes. It worths mentioning that "Questions for self control and discussion" at the end of each chapter conclude two or three questions of the form "right-wrong" and require from students to explain by their examples the terms which they were taught in this chapter. The latent

conception in this statement is that students' answers to these questions are sufficient indications for the comprehension of student. It is about an assumption on which traditional discourse of assessment relies. According to this assumption the teacher can arrive at a precise conclusion about the comprehension of student and his/her way of thought. (see, Morgan, 2000).

Considering the areas of objectives which are assessed by the proposed tests and forms of assessment in teachers' textbooks, inconsistency is found between textbooks and U.I.C. is found out because in tests of assessment cognitive objectives and skilfulnesses which concern problem solving and performance of processes mainly are assessed. In the teachers' textbooks for B', E' and D' classes forms for self-assessment on team-cooperative skilfulnesses are also proposed.

As regards to autonomy which teachers' textbooks give to teachers as to the duty of assessment, a degree of freedom is given as to the use of proposed tests. Teacher can use them "unedited or in his/her judgment" (Mathematics for Primary School, Textbook Supplement for Teacher, D' class, p. 21) choosing exercises from a proposed test of the textbook for his/her class or each student (Mathematics for Primary School, Textbook Supplement for Teacher, F' class) or construct a test of his/her own with the presupposition that it does not deviate from the predetermined objectives of the unit (Mathematics for Primary School, Textbook Supplement for Teacher, B' class). According the textbook for B' class the teacher has also the freedom to modify the teaching time of each chapter.

Within the discourse of teachers' textbooks the role constructed for the teacher is that of the local enforcer who is obliged to follow the official policy on assessment, yet, at the same time, ought to take into account his/her students' needs. He/she takes the initiative in modifying, to a degree, the proposed assessment practices, depending on the students' individual situation, yet taking care not to stray far from the general frame of assessment that the official discourse shapes.

By investigating the sources of their arguments, it became apparent that the producers of teachers' textbooks mainly draw on the discourse of researchers with respect to the concept, objectives and necessity of assessment. Some times they found their statements on the official discourse of curricula.

As for the main linguistic features used in the teachers' textbooks which are linked to "ideational" and "interpersonal" functions of language, essential similarities were observed. Specifically:

The processes that dominate are "attributive" processes (Halliday, 1985) when it comes to the nature of assessment and its methods. "Existential" processes are used when it comes to the existence of tests of assessment which are included in the teacher's textbook. In these cases the use of nominalizations is a usual phenomenon. "Material" processes are used when instructions are given about the use of assessment methods and then the teacher is the logical subject of the process that is

identified with the grammatical subject, then active voice is used. When the teacher is stated explicitly as the agent or he/she is omitted but his/her identification is implicit, passive syntax is used. Statements are expressed by positive clause except for the use of some negatives which connect intertextually the text with previous texts to which the writer had access. The use of negatives can also indicate preexisted views of teachers about the nature of assessment as well as established practices for the use of its methods.

The formulation of statements in third person, the absence of personal pronouns in first and second person as well as the use of nominalized nouns (“assessment”, “revisioning lessons”, “tests”, etc.) in the place of actors give a typical style to the text and contribute to the creation of distance between the writer and the reader constructing a typical relation between them. In some cases the use of verbs in the first plural person is noticed which (in Greek language) refers to the personal pronoun “we”. The pronoun “we” has sometimes “exclusive” meaning, sometimes “inclusive” (see Fairclough, 1989, p. 127). In the first case it is indicated that the team of authors speak with the voice of scientists’ community where they belong to, that guarantees the validity of their statements. The use of modal “must” and of phrases as “we owe...”, “it is necessary” intimates obligation of observance of proposed process by the teacher. In the phrases “it is better”, “it is advisable”, “it is very important”, “it is a good tool”, “the proposed activities correspond clearly with the objectives”, “we suggest”, “the authorship followed the valid specifications of Pedagogic Institute” the writer’s intention of persuading the reader to apply the instructions which are proposed is revealed. The relation that is constructed between the writer and the reader is asymmetrical relation of power: The writer is the provider of knowledge and vehicle of instructions, whilst the reader is constructed as a person who isn’t informed of the way of assessment and for this reason he/she needs guidance. In some cases (the phenomenon is often in the teachers’ textbooks for B’ and E’ classes which are products of the same team of authors) it is noticed use of the first plural person “we” which has “inclusive” meaning, and then the intention of reader’s identification with the position of writer and consequently active participation in the activities which are proposed. It has to do with attempt of the writer to decrease the distance between him/her and the reader so that more favorable conditions are created for the performance of these activities. The use of technical/scientific vocabulary such “portfolio”, “self assessment”, “peer assessment” and the absence of further explanations suppose that the reader can comprehend the statement of the text and apply the instructions. The clauses are declarative intimating the asymmetrical relation of power between the writer and the reader. The tense that is used is the present in the indicative mood which expresses the certainty of writer for his/her statements. The modality of certainty is dominant.

As for the textual aspects of teacher’s textbooks, the thematic choices that the producers of texts make, and information or instructions which they give without making distinction between them, construct texts as descriptive, informative, but also

a handbook with instructions about the assessment. In some cases it is noticed justification for statements by arguments and causal turn isn't consistent in all texts. The choice of causative and deductive conjunctions as well as the apposition of statements that relate with causality is more often in the textbook for first class (A') in primary school constructing the text argumentative beyond informative.

CONCLUSIONS

Within the official texts, we see two dominant discourses in conflict with each other. On one hand we find the pedagogical discourse which is encoded in words and phrases of pedagogical content, and on the other hand the educational-political discourse which expresses the government's intentions for education and is encoded in the syntax of official texts.

The main characteristics of official texts are similar to those of scientific texts: tendency to impersonal expression that adds objectivity to the statements in the text, absence of personal syntax achieved with the use of nominalizations and passive syntax, use of processes that concern relationships when it comes to the nature and methods of assessment, use of simple present in the indicative that expresses the modality of certainty, specialized technical/scientific vocabulary (see Kress, 1989). Analysis of texts shows contradictions and ambiguities within the official discourse, lack of unified approach as to proposed practices of assessment in the classes of primary school, inconsistency between curriculum and textbooks. This fact obviously poses the need to critically consider and clarify the values and proposed practices. Simultaneously, considering the difficulty in applying alternative methods of assessment, as researches point out (Black & Wiliam, 1998, Kahn, 2000, Vlachou 2007) as well as tensions that it causes to teachers (Broadfoot, 1998, Lyons, 1998), it is evident that teachers' training programmes on assessment and how to apply alternative methods should be planned.

NOTES

1. Author's note: Attendance at Primary Education lasts for six years and includes six classes: A', B', C', D', E', F'. Children are admitted at the age of 6.

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