International Journal of Research in Humanities and Social Studies
Volume 4, Issue 1, January 2017, PP 33 -37
ISSN 2394-6288 (Print) & ISSN 2394-6296 (Online)
http://dx.doi.org/10.22259/ijrhss.0401006

Elementary Second Grade Mathematics Book Content Analysis Considering its Compliance with Fundamental Transformation Document Objectives

Farideh Mohammadi

Ministry of Education, Zanjan, Iran

ABSTRACT

This study aimed to investigate the compliance of elementary second grade mathematics book with education fundamental transformation document objectives. This was applied-descriptive study and quantitative content analysis was conducted. The population consisted of all pages of elementary second grade mathematics book content (texts, pictures, and exercises) in 2015-2016 (N= 145). All pages were considered as sample. A questionnaire which was consisted of various standard content analysis tables was used as research tool. The Scott's formula was used to determine the validity of questionnaire and its reliability coefficient was determined to be 0.87. The findings showed that 46.4% of objectives in book were proper objectives and 31.2% needed to be modified. In some cases, up to 10 subjects were included in one objective. The lowest percentage of objectives in the book was dedicated to emotional class (15.0 percent). Considering the recent developments and provision of national fundamental transformation document, its value was determined to be low.

Keywords: Content Analysis, Mathematics Book, Fundamental Transformation Document.

PROBLEM STATEMENT

The education system is the most important and most productive institution in a community. It is a process which provides a proper ground for growth and prosperity of people in all aspects and is responsible for rational planning and organization of educational opportunities and educational activities. Today, the high quality planning in education system has led to its dynamic deployment and optimal continuity. The planning, teaching, and learning are considered its most important tasks.

In a systematic review and analysis of teaching – learning process, the textbook is a sub-system which provides the planned educational content in the best form. In fact, the textbook helps teacher and students to achieve effective learning (Lehning & Catherin, 2007, quoted by Sheikhi Aram, 2012).

The textbook is the most important and most reliable scientific reference to guide teacher and student activities to achieve educational goals. The educational policymakers and planners pay more and more attention to it. Given the importance of textbooks, the educational planners are responsible for selection, regulation, preparation, and organization of textbooks content. In the process of educational planning, the planners assess the needs, determine the objectives, and finally, select and organize the educational content. The selection of appropriate and desirable content is the first step to realize the objectives. Since the objectives are achieved by content, the content which is offered in the form of textbook is always considered as an important curriculum element (Maleki, 2010, p. 66). On the other hand, since the curriculums in Iran are mostly based on behavioral approach and its principles and the impact of environmental factors, including textbooks on learners is one of its principles, it is important to analyze the content of textbooks, use qualitative, quantitative, objective, and systematic methods to describe this education medium, and get informed of its effectiveness in teaching and learning. According to above, this question is raised: is the elementary second grade mathematics book compatible with fundamental transformation document objectives?

THEORETICAL FOUNDATIONS

Analysis of Content and its Selection Criteria

There are many different definitions for content analysis. This variety is somewhat due to history of this technique and its development process. The analysis means description of messages using regular and objective methods. More precisely, it means the analysis of data which are embedded in content of messages (Ashtiani, 2007).

Content analysis: The scientific analysis of communicated messages (Barbox, quoted by Iran Nejad, 2006, p. 11).

The content analysis is a research method in which researchers describe quantitatively, regularly, and objectively the content of message (Berelson, 1985, p. 18).

The content analysis is a technique to find research results through regular and objective determination of messages specific properties (Stone et al., Quoted by Iran Nejad, 2006, p. 13).

The content analysis is classified into three types:

1. Categorical content analysis
2. Evaluative content analysis
3. Correlative content analysis.

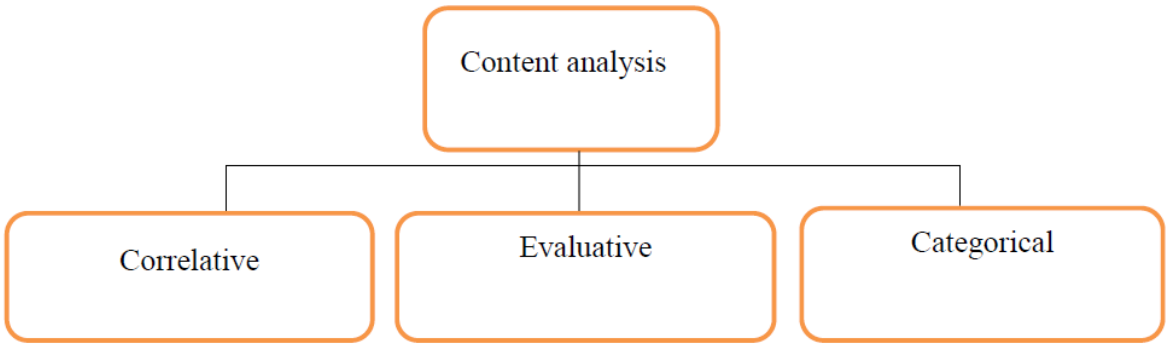

Figure1. *Content analysis types (Mousavi Nasab, 2007)*

As a key component of education programs, the content has always been considered by educational scholars, educators, and theorists. This fact should be considered that the excellent and accurate educational objectives will not be achieved without good and suitable content. The definitions of content were previously discussed. In this section, the content selection concepts and criteria will be discussed. Different criteria are determined by educational experts, authors, and planners for content selection. Here, some of them will be briefly mentioned:

Compliance of Content with Objectives

The educational content must be prepared and developed according to educational objectives. For example, as the attention to various fields is necessary in selecting the objectives, it is necessary to consider emotional, cognitive, and psychological-motion areas in formulation of content, as a means to fulfill the objectives.

Compliance of Content with Community

In formulation of content, it is important to consider society and its issues including cultural heritage, current and future needs of society, and social realities; therefore, the content will meet the needs of society.

Hilda Taba believes that the educational planning will be useful if it will be consistent with cultural reality of its time (Mirzabeygi, quoted by Taba, 2001, p. 170).

Compliance of Content with Inclusive Needs

The man has different needs and these needs are different in every person. Therefore, the educational program should comply with inclusive age, sex, and individual features and needs. Considering these characteristics and needs, the content should be flexible and diverse.

Content Validity

The educational content will be valuable if it complies with valid update opinions and findings. Taba (1962) states that the validity and importance of educational program depends on the extent which it reflects current scientific knowledge (Mirzabeygi, 2001, p. 179). It should be noted that this knowledge must be updated scientific knowledge, because the science is constantly changing and reforming.

Importance of Content

Considering the increasing volume of information and knowledge, which content in which volume should be used to develop educational content? Some believe that the education hours should be increase, others believe that the learners should learn the basic and fundamental issue, and some argue that this depends on the extent of curriculum. In summary, the experts believe that the importance of content depends on its contribution in ideas, concepts, principles, and basic generalization associated with educational objectives (Mirzabeigi, 2001). The content should also consider the learning development skills, processes, and attitudes (Mirzabeigi, quoted by Orentish & Hankinz, 1993).

METHODOLOGY

This was applied-descriptive study and quantitative content analysis was conducted. The population consisted of all pages of elementary second grade mathematics book content (texts, pictures, and exercises) in 2015-2016 (N= 145). All pages were considered as sample. A questionnaire which was consisted of various standard content analysis tables was used as research tool. The Scott's formula was used to determine the validity of questionnaire and its reliability coefficient was determined to be 0.87.

FINDINGS

Analysis of Objectives based on Area and Class

According to results, from 367 modification objectives in studies textbook, 68.9% of objectives were in cognitive area, 16.1% of objectives were in psychomotor area, and 15.0% were in emotional area.

According to findings, among the psychomotor, cognitive, emotional classes, the highest percentage of objectives (28.0%) are in application class and lowest percentage of objectives (0%) are in cognitive analysis and emotional classes.

Distribution of Modification Objectives in Cognitive Area

According to results, from 68.9 percent of objectives in cognitive area, the highest percentage (28.3%) belongs to application class and the lowest percentage (1.4%) belongs to evaluation class. However, 20.4% of objectives are in understanding class, 7.4% of objectives are in knowledge class, 6.8% are in combination class, and 4.6%are in analysis class.

Distribution of Modification Objectives in Psychomotor Area

According to findings, from 16.1 percent of objectives in psychomotor area, the highest percentage (5.7%) belongs to coordination class and the lowest percentage (0%) belongs to normalization class. However, 3.5% of objectives are in independent performance class, 5.2% of objectives are in accuracy class, and 1.6% are in imitation class.

Distribution of Modification Objectives in Emotional Area

According to findings, from 15.0 percent of objectives in emotional area, the highest percentage (6.8%) belongs to response and organization class and the lowest percentage (0%) belongs to valuation class. However, 1.4% of objectives are in consciousness class.

Analysis of Objectives based on the Content (Text, Picture, Exercise)

A) Relevant Text

According to results, from 367 modification objectives of this textbook, 94.6% of objectives have relevant texts and 4.4% of objectives have non-relevant texts.

B) Relevant Picture

Based on findings, from 367 modification objectives of this textbook, 67.3% of objectives have relevant pictures and 31.9%% of objectives have non-relevant pictures.

C) Related Exercises

According to figure 8, from 367 modification objectives of this textbook, 92.6% of objectives have relevant exercises and 4.4% of objectives have non-relevant exercises.

Objectives Analysis Based on Text Content Elements

According to results, from 367 modification objectives of this textbook, 94.1% of objectives have relevant texts and 4.4% of objectives have non-relevant texts.

Accordingly, from 367 modification objectives of this textbook:

A) Subject: from 95.6% of objectives which have relevant text, 94.6 percent of objectives have complete subject and 1.1 percent have incomplete subject.

B) Class: from 95.6 percent of objectives which have relevant text, 93.5 percent are in the same class, 0.5% are in lower class, and 0% in higher class.

C) Condition: from 95.6% of objectives which have relevant text, 91.3 percent of objectives have complete condition and 1.4 percent have incomplete condition.

Objective Analysis based on Pictures

According to results, from 367 modification objectives of this textbook, 67.6% of objectives have relevant pictures and 32.4%% of objectives have non-relevant pictures.

Distribution Percent of Objectives According to Pictures Type

According to findings, from 67.6% of objectives with relevant pictures, 4.4% are for tables, 3.0% for figures, 15.5% for pictures, 54.5% for drawing, and 11.2% for plan.

According to results, from 92.9% of objectives with relevant pictures, the coverage and quality of pictures is as follows:

1-Coverage status: 65.7% of pictures have full coverage and 1.4% of pictures have incomplete coverage.

2-Quality status: 66.5% of pictures have good quality and 0.8% have bad quality.

Objective Analysis based on Exercise

According to results, 94.3% of exercises are related to curriculum objectives and 5.7% of exercises are not related to curriculum objectives.

Distribution Percentage of Exercises which are Relevant to Course Objectives

According to findings, from 80.4% of objectives which has relevant exercise, 46.9% of exercises are condensed and 39.5% are concentrated.

Percentage Distribution of Exercises Which Are Relevant to Courses Objectives based on Area and Class of Learning

According to results, from 94.3% of objectives with relevant exercises:

A) 80.4% of objectives have appropriate exercise in the same area and there is no inappropriate exercise in the same area.

B) 80.4% of objectives have appropriate exercise in the same class and there is no inappropriate exercise in the same class.

C) 5.7% of objectives do not have exercise, 4.6% need exercise, and 12.5% do not need exercise.

CONCLUSIONS AND RECOMMENDATIONS

According to obtained statistics, it can be concluded that 46.4% of objectives are proper and 53.6% of objectives are in multi-part form. Therefore, some objectives need to be modified. For example, the objectives in lesson 9 are in 3 to 6 subjects.

Also, according to findings, it is determined that 68.9% are dedicated to cognitive area, 15.0% are dedicated to emotional area, and 16.1% are dedicated to psychomotor area. The lowest percentage of objectives in the book is dedicated to emotional area.

In terms of pictures, almost all objectives which require picture have proper picture, except in three cases: lessen 34 (Code 4.2, 5), lesson 30 (Code 1.2), and lesson 12 (Code 4.3) which have improper and incomplete picture. In this regard, according to findings, it is recommended that

1. Proper exercise is designed and incorporated for 5.7% of objectives which lack relevant exercise in lessons 13, 16, 27, 31, 34, and 37.
2. In order to create a balance in distribution of objectives in three learning areas, the objective determination and distribution to be oriented partly towards emotional area to promote the interest and motivation for learning mathematics.
3. For 1.4% of incomplete pictures in lessons 12, 14, and 34, perfect pictures to be designed.
4. For 0.8 % for improper pictures in lessons 30 and 34, appropriate, good quality, and attractive pictures to be designed.

REFERENCES

[1] Ansari Rad, P. (2012). Features of primary school science curriculum. Research Organization, Curriculum Programming Council.

[2] Irannejad, P. et al. (2006). Content analysis of elementary school textbooks. Tehran: Sarafraz publication.

[3] Bab al-havaeji, F. (1998). A content analysis of textbooks. Quarterly research and education, number 8.

[4] Burden, L. (1996). Content analysis. Translated by Malihe Ashtiani and Mohammad Yamani Doozi Sorkhabi. Tehran University of Shahid Beheshti.

[5] Sheikhi Aram, A. (2012). Analysis of vertical relationship in fifth grade elementary and middle school mathematics books. Master's thesis. University of Shahid Rajaee.

[6] Maleki, H. (1996). A theoretical framework for organizing curriculum content. Quarterly of research and education, No. 5.

[7] Ozgeldi, M. Esen, Y. (2012). Analysis of mathematical tasks in Turkishelementary school mathematics textbooks. Procedia Social and Behavioral Sciences 2, pages 2277-2281.

[8] Sengun, Y. Iskenderoglu, T. (2010). A review of creative drama studies inmath education: aim, data collection, data analyses, sample and conclusions of studies. Procedia Social and Behavioral Sciences 9, pages 1214-1219.