

## **Textbook Evaluation in Pakistan: Issue of Conformity to the National Curriculum Guidelines**

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### **Abstract**

Development and production of textbooks is a continuous process, which needs continuous and rigorous research and development. The responsibility for evaluation and approval of materials from Early Childhood Education to grade XII, for use in the government schools lies with the official curriculum panels/ committees of the Curriculum Wing, Ministry of Education which is the curriculum regulatory body in Pakistan. This study aims at exploration of textbook evaluation process through analysis of the approved textbooks by the ministry of Education. Eight textbooks in the subjects of science and mathematics, developed in the public and private sector, were analyzed. Basis of the analysis was parameters of a quality textbook including conformance to curriculum guidelines and scheme of studies; format and design; and culture and context. These parameters were validated by experts in national level workshop. The results show that there is a need to make the criteria objective with respect to content coverage in relation to curriculum content scope, concept building, cognition level of assessments given in end of chapter exercises, format and design, and binding for its durability.

**Key words:** School Curriculum, Curriculum Material, Textbook, Evaluation, Quality

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### **Introduction**

For the proper implementation of any school curriculum, textbooks become part and parcel of the education system. Especially, in developing countries, it has been a regular practice to consider textbooks as the major source of the teaching learning process to be undertaken in schools. In most of major parts of the world, and for most of the teachers, a textbook is an authentic material to be presented in the classroom, while for most students it has become a common practice to be burdened with a bag packed with their prescribed textbooks on their way to school. In Pakistan, the Green Paper on Textbook and Learning Materials of Ministry of Education also admits that, “the textbook is the only available learning material in most schools. Additional materials like teaching aids, supplementary reading materials and school libraries are virtually non-existent” (Govt. of Pakistan, 2006, p.2).

Use of textbooks cannot be neglected anyway. The textbook is a source of potential learning as to what students learn from textbooks and the practicality of that learning is mediated by the school context (teacher, peers, instruction, and assignments). Textbooks have many purposes. A textbook is a “powerful media for teaching and learning” (Tanner, 1988, p. 141). It is a “necessary tool for regular students” and “guide for the inexperienced teachers” (Govt. of Pakistan, 2000, p.23). Sheldon (1988) believes textbooks are heavily utilized by teachers and he identified three main reasons for this: a) developing their own classroom materials is extremely difficult and an arduous process for teachers; b) teachers have limited time in which developing new materials might not be possible; and c) external pressure which restricts many teachers in introducing their own developed materials. Textbooks have an enormous influence on what is taught in primary, elementary and secondary classes and how it is taught? According to John (2001) “majority of teachers use textbooks as their principal curriculum guide and source of lessons” (p.32). Tyson (1997) found “those new and inexperienced teachers, or those who lack in adequate time for lesson planning, may actually teach from the first page of the textbook to the last, skipping little or nothing” (p. 89).

In different countries the availability of textbooks in terms of variety is subject to national/regional policy decision. However, increased attention has been paid also to the quality of textbooks. There are many countries in the world where a single textbook is being used across the system, and till the recent past, Pakistan and China were also following this mode. However, in many countries, the use of multiple textbooks is very common. Various competitors including individuals and institutions develop textbooks in the light of guidelines given by the curriculum regulatory body of the country, and schools are free to select from these books for their students. In Pakistan, in the light of the National Education Policies 1998-2010 and 2009, National Textbook and Learning Materials Policy and Plan of Action was notified in 2007 to strengthen the development of multiple textbooks in the country. In view of this, competition among the textbook developers was obvious in the country.

### **Textbooks development, evaluation and approval in Pakistan**

The Curriculum Wing, Ministry of Education, Islamabad, periodically revises the curricula at national level for Early Childhood Education to grade 12, in consultation with its sister organizations in the provinces, which are then introduced through textbooks in schools for the entire country. The Wing is the only institution in the country that has the mandate to approve textbooks and other teaching learning materials for the entire country up to grade 12.

In most countries around the globe, Pakistan included, textbooks are written by experts with the assistance of publishers, and these textbooks are

evaluated by a government agency. In Pakistan, the role of textbook development rests with the provincial or regional Textbook Boards, and private publishers have also started developing textbooks. These boards and private publishers publish the textbooks according to the guidelines provided in the national curriculum. The Curriculum Wing, Ministry of Education, evaluates these textbooks with the help of committee called the National Textbook Review Committee. On the recommendation of the panel/committee, the ministry approves the textbook for the use in school.

In the early 60's, the use of multiple textbooks was a very common practice in Pakistan. Later on, this practice was stopped after the creation of Provincial Textbook Boards in the government sector to develop textbooks for both public and private schools. The Commission on National Education (Govt. of Pakistan, 1959) gave a number of reasons to create Textbook Boards vis-à-vis production of single textbooks. These included: a) non-availability of first rate textbooks, b) most of the books were developed by non-professionals, c) poor presentation of textbooks, d) selection of textbooks on the basis of administrative pressure instead of merit, e) temptations offered by the publishers, f) lack of evaluation by the experts, g) high price of the textbooks, and h) students were forced to buy cram books in addition to textbooks etc. In the beginning, these Boards used a number of measures to produce quality textbooks. The Ministry of Education also ensured quality by engaging experts. Nevertheless with the passage of time the quality of textbooks started to decline. In the mid eighties, keeping in view some examples of other countries, the government expressed its concern about the quality of textbooks and their impact on teaching learning process, as envisaged in the National Education Policy (1998-2010); "Quality of textbooks has been a continuous source of concern. [Single] Sole-textbooks, which are prescribed up to secondary level, are causing a number of problems in teaching, learning and evaluation of students" (p.3) In order to solve this problem the government felt the need for multiple textbooks and decided to revive the policy followed until the early Sixties. In view of this, the National Education Policy of Pakistan 1992 highlighted the need for multiple textbooks and the National Education Policy (1998-2010) further emphasized on its importance, as it comments "a competitive system of multiple textbooks is being introduced at secondary level. The availability of multiple textbooks instead of sole-textbooks is expected to broaden the knowledge base of students and minimize the chances of rote learning". (p.3)

In view of the National Education Policies 1998-2010, and 2009, the use of multiple textbooks has now been allowed in both public and private schools. Under the policy provision of 1998-2010, the ministry has approved textbooks from grade one to five also developed under the private sector. A few of the private publishers whose textbooks have been approved include: a) Oxford University Press, Karachi; b) National Book Trust,

Karachi, c) Paramount Publishers, Lahore; d) Far East Publications, Karachi; e) Ferozsons Limited, Lahore; and f) Gaba Publishers, Karachi.

No doubt, the emergence of the private sector has introduced opportunities for competitive textbooks in the future, but at the same time it has created a number of challenges for the ministry as well. The ministry is expected to be appreciative, supportive and encouraging to promote the culture of multiple textbooks but cannot ignore the quality of the textbooks. "There is a serious need to put focus on the improvement of the quality of the textbooks" (Govt. of Pakistan, 2007, p.24). This highlights the need for a careful review of textbooks and other teaching learning materials before they are introduced in the schools.

Evaluation and approval of both supplementary instructional materials and a complete series of instructional programmes is the key to the success of any instructional activity. This situation demands an analysis of the textbook development and approval processes as well as the textbooks themselves.

## **Objectives and Methodology of the Study**

Evaluation of textbooks is considered as one of the means for regulating and standardization of the textbooks to maintain their quality across the nation and/or region. The prime objective of the study was to analyze approved textbooks to respond to the question: To what extent do the currently approved textbooks conform to the existing criteria of the Ministry of Education for textbooks approval? Specifically speaking; to what extent are the approved textbooks congruent with the objectives of the National Curriculum 2000-2002?

The questions were answered through document analysis, and content analysis of the approved textbooks. Document analysis of educational files, records, and reports can prove to be an extremely valuable source of data (Bell 2005). It is "a technique that enables researchers to study human behaviour in an indirect way through analysis of their communication" (Fraenkel & Wallen, 2006, p.483). The textbook is also communication used to deliver curriculum. Content analysis is usually done in two modes/ways; a) conceptual and b) relational. In conceptual analysis, a concept is chosen for examination, and the analysis involves quantifying and tallying its presence. The relational analysis, like conceptual analysis, begins with the act of identifying concepts present in a given text or set of texts, however, it seeks to go beyond the presence by exploring the relationships between the concepts identified. Relational analysis has also been termed as semantic analysis (Palmquist, Carley, & Dale, 1997). In other words, the focus of relational analysis is to look for semantic, or meaningful, relationships. In the present study conceptual analysis was done for the selected sample of textbooks. The analysis of the approved textbooks is based on four parameters: a) compliance of these textbooks with objectives

(based on cognition levels) of the National Curriculum; b) coverage of the depth and breadth of the content given in the curriculum; c) amount of space allocated to different topics in the book with respect to amount of time and weightage of the topic specified in the curriculum guidelines to deliver in the grade, and d) overall presentation of the book. These are the basic parameters for textbook evaluation in any setting (American Textbook Council, 2002; Department of Education of Philippines, 2004; National Institute for Educational Development, Ministry of Education, Republic of Namibia, 2005; Ministry of Education, Government of the Republic of Trinidad and Tobago, 2005; Ontario Ministry of Education, Canada, 2006; Rotich and Musakali (2006) in describing Role of the Ministerial Textbook Vetting Committee in Kenya; Ministry of Education Malaysia, 2009).

Eight approved textbooks of mathematics and science for grade three developed by public and private publishers were included in the sample of the study. These textbooks were being taught in different schools across Pakistan in both public and private sectors at the time when this study was conducted. The framework, including rubrics used for the analysis, were developed by the researcher and validated by the experts, including persons having an education degree and who have been working: a) as professional staff member of Provincial/regional Curriculum Bureaus, Provincial/regional Textbook Boards, National Book Foundation, and/or the Ministry of Education; b) as professional staff member of private publishing houses whose books have been approved by the ministry; c) as faculty of Higher Education Commission recognized private and/or public university and teaching curriculum and/or material development and evaluation as subject at post graduation level; and/or d) as curriculum/subject committee member at national and/or provincial level. The bases of the analysis included: a) compliance of these textbooks with objectives (based on cognition levels) of the National Curriculum; b) coverage of the depth and breadth of the content given in the curriculum; c) amount of space allocated to different topics in the book with respect to amount of time and weightage of the topic specified in the curriculum guidelines to deliver in the grade, and d) overall presentation of the book.

Curriculum Wing, Ministry of Education, Government of Pakistan has approved textbooks for grade one to five for the six Textbook Boards of Pakistan including Azad Jammu and Kashmir (AJK), and National Book Foundation Islamabad, and several textbook series produced by various private publishers. It was not possible to evaluate all the books of each series. Therefore, the study was delimited to: a) Punjab Textbook Board, Lahore and Sindh Textbook Board, Jamshoro, being the biggest Boards in the public sector; b) Oxford University Press Karachi and Gaba Educational Books, Karachi – the most popular textbook publishing agencies in the private sector; c) two compulsory and relatively more objective subjects i.e. Mathematics and Science.

## **Data Analysis and Interpretation**

The national curriculum guidelines defines; a) level of understanding desired in the textbooks to be inculcated among the students of the particular grade and level, b) the depth and breadth of contents, c) suggested activities to be included in the books, d) instructions for teacher, and e) suggestions for textbook writers. However, the curriculum guidelines document does not give any guidelines on format and design of the textbook, nor could any explicit criteria be found within the ministry in this regard. Textbooks developed by the private or public sector in the light of curriculum guidelines are submitted to the ministry for evaluation and approval. The ministry constitutes committees/panels called National Textbook Review Committee (NTRC) for textbook evaluation and then accords approval.

## **Compliance of the approved textbooks to the curriculum objectives**

The level of understanding desired in the textbooks to be inculcated among the students of the particular grade and level have not explicitly been defined in the National Curriculum guidelines for the subject of mathematics. Nevertheless, Government of Pakistan (2000) has listed the following objectives for mathematics textbooks for grade one to five;

1. "To acquaint the child with basic knowledge of numbers.
2. To develop appropriate skills of computation in four fundamental operations
3. To acquaint the child with basic knowledge of two and three dimensional geometrical figures.
4. To develop ability to solve practical problems by the application of fundamental measures (money, time, weight, length...).
5. To make the children understand the presentation of data in visual form". (p.1)

Apart from other skills demanded in these objectives, objective 4 of the mathematics curriculum demands inculcation of higher order skills including, what Bloom (1956 & 1971), Simpson (1972), and Krathwohl, Bloom & Masia (1973), state as; analysis, synthesis and evaluation. Based on the Bloom Taxonomy of cognition domain, the researcher has explored levels of understanding that each textbook wanted to inculcate in the students of the grade 3. In Table 1, a summary of the analysis of the sampled textbooks have been given.

Table 1  
Understanding Level Demanded in the Grade 3 Mathematics Textbooks

Major Topics	Quest Publishers	Teach Publishers	Pursuit Publishers	High Publishers
Natural Number	1	3	1	1
Common Fraction	2	1	1	1
Decimal Fraction	1	1	-	1
Algebraic operations	2	2	2	2

Note: 0 Knowledge , 1 Comprehension, 2 Application, 3 Analysis  
The highest level of understanding for each topic demanded in the textbooks has only been mentioned in the table. Pseudonym of textbook publishers included in the sample

Table 1 reveals that mathematics textbook approved by the Ministry of Education did not aim to inculcate the understating mentioned in the curriculum. One of the approved textbooks indoctrinated ‘analysis’ for its chapter/unit on ‘natural number’ only, whereas rest of the three books only taught ‘comprehension’ for the very topic. It reflects inconsistency among the approved textbooks with respect to required level of understanding, except ‘algebraic operations’ and to some extent ‘decimal fraction’. Learning depends mainly on learning of concepts to the level of desired by a curriculum for a particular grade and level. Although it could not be denied, the understanding of concepts differs from individual to individual according to their environment and cognition level. In case of a single textbook, the textbook should at least address the minimum level of understanding. Objective 4 of the national curriculum for mathematics demands material that promotes ‘application’ and /or ‘analysis’ levels understanding among the students. Nevertheless, except chapters/units on ‘algebraic equation’ majority of the approved textbooks only selected materials that promote ‘comprehension’ only. This means that either the ministry failed to convey the explicit criteria to the evaluators or the evaluator could not have enough understanding of the taxonomy of the cognitive domain. This is not in alignment to Nogova and Huttova’s (2006) discussion of ‘Determining the reliability of criteria’, in which they emphasize that “In order to be able to declare that textbook evaluation is objective, we must be confident that all evaluators have understood the criteria in the same way” p. 338).

Contrary to mathematics curriculum guidelines, objectives for the subject of science have been given in detail. The major headings for each set of the objectives mentioned in the curriculum guidelines of the Government of Pakistan (2000) are; a) enquiring and investigation, b) understanding and applying scientific knowledge, c) communication of scientific knowledge, and developing scientific attitude. However, for analysis purposes, the researchers considered only ‘understanding and applying scientific knowledge’. The ministry (Government of Pakistan, 2000) has enlisted the following specific objectives to further unpack this objective.

“[1] Knowledge and understanding of the basic concepts, principles

- and processes of science
- [2] Application of scientific knowledge in familiar and unfamiliar situations and in daily life including those of personal, social and environmental nature.
  - [3] Ability to utilize simple technology.
  - [4] Understanding of the personal, social (both benefits and drawbacks) and environmental implication of science.
  - [5] Understanding of the economic and technological application of the science. (p.2)

Apart from mere familiarization and understanding demanded in these objectives, objective 2 of the science subject demands inculcation of ‘application, as mentioned in Bloom Taxonomy of cognitive domain, among the students. The researcher identified levels of understanding that each of the approved science textbook included in the sample. Below is the summary of the analysis of these textbooks.

Table 2  
Understanding Level Demanded in the Grade 3 Science Textbooks

Major Topics	Quest Publishers	Teach Publishers	Pursuit Publishers	High Publishers
Plants	1	1	1	1
Animals	1	1	1	1
Environment	3	1	1	2
Continuity of Life	1	1	1	1
Matter and its Properties	3	3	1	3
Motion and Force	3	2	1	2
Energy	2	1	0	2
Electricity and Magnetism	2	2	1	2
Earth and Space	1	1	0	1

Note: 0 Knowledge, 1 Comprehension, 2 Application, 3 Analysis  
The highest level of understanding for each topic demanded in the textbooks has only been mentioned in the table.

Table 2 discloses that there is some consistency in the approved science textbooks especially for units on plants, animals, continuity in life, and earth and space. Nevertheless, most of the units of these textbooks are inconsistent with respect to level of understanding desired for the students of grade 3. Most of the books do not promote higher cognitive skills, actually desired in the National Curriculum. This data also indicates that if the Ministry provides more details and clarity on criteria, it brings more consistency in the textbook evaluation.

During content analysis of the approved science textbooks included in the sample, the researcher could not find any material that addresses Objective 3 specified for this subject in the National Curriculum. All the textbooks in the sample contain one section in unit/chapter on plants under



the heading 'importance in life' and/or 'importance' to address the part of the objective 4. Otherwise, very little material was found about the rest of units/chapters of these books to achieve or satisfy this objective. Out of the four textbooks included in the sample, the researchers could not find any evidence on content addressing requirements of the objective 4 as a cross-cutting theme in terms of creating environmental awareness through subject matter presented in the textbooks. Rather an independent chapter on the topic has been included in the books.

The above discussion illustrates that there is lack of; a) compliance with objectives of the curriculum in the approved textbooks, and b) homogeneity with regard to the level of understanding demanded by each of the approved textbooks. Nevertheless the teachers have almost the same background and academic support available to the end users of all the textbooks, that is, students. Tables 1 and 2 reflect that criterion used to evaluate textbooks with respect to conformity to curriculum objectives were not explicit for everyone in the National Textbook Review Committee and/or the committee members did not have adequate understanding of cognition levels of Bloom Taxonomy of learning objectives. Furthermore, there is a possibility that the committee members were not properly orientated to the textbook evaluation process and its requirements.

### **Compliance of the approved textbooks with coverage of the depth and breadth of the content given in the curriculum**

The curriculum guidelines define the depth and breadth of contents to be covered in a textbook. Among the two curriculum guidelines reviewed in this regard, the Government of Pakistan (2000) gives clear instructions in the subject of mathematics but the same is not clear in the subject of science. The data given in Table 3 below shows the coverage mentioned in the national curriculum for the subject of Mathematics textbooks approved by the ministry.

Data presented in the Table 3 does not mean that 1 (one) reflects same amount of explanation and/or coverage of the subject matter given in all the approved textbooks. Even then, the table reveals that there is variation with respect to content coverage in the approved mathematics textbooks for grade 3. In one of the approved mathematics textbook a number of topics required by the national curriculum are not included. Further analysis of these books revealed that some topics in these textbooks have been covered which were not demanded in the national curriculum. For example; a) Shares in terms of parts are given, find actual amount, b) Rate (per kilometer), c) Distance (between height & breadth, etc.).

Around the globe, one of the fundamental criteria for textbook evaluation is the complete coverage of the content matter listed in the curriculum guidelines (American Textbook Council, 2002; Department of

Education-DepED, Textbook Policy, 2004) National Institute for Educational Development-NIED, 2005; Nogova and Huttova, 2006; Ontario Ministry of Education, 2006; Rotich and Musakali, 2006; Ministry of Education, 2009. Here in the case of evaluation of mathematics textbooks in Pakistan, this basic criterion was ignored. This reflects two situations, either the committee comprised of different experts for the evaluation of books produced by different publishers and/or the committee members were not well aware of the content outline given in the curriculum.

Table 3

Content mentioned in the National Curriculum and Coverage in the Approved Mathematics Textbooks

Scope given in National Curriculum 2000	Quest Pub.	Teach Pub.	Pursuit Pub.	High Pub.
<b>Number theory</b> (Even and odd natural numbers up to 100; Reading and writing Roman numbers up to 12; Concept of a dozen)	1.0	1.0	0	1.0
<b>Common fraction</b> (Comparison of fractions with equal denominator; Comparison of fractions with equal numerator)	1.0	1.0	0	1.0
<b>Decimal fraction</b> (Concept of decimal fractions; Conversion of a decimal fraction into proper common fraction and vice versa)	1.0	1.0	0	1.0
<b>Algebraic operations</b> (Rules of addition and subtraction for even and odd numbers; Addition and subtraction of decimal fractions)	1.0	1.0	0	1.0
<b>Geometry</b> (Identification of kinds of triangles with respect to sides; Measuring the sides of a quadrilateral: Drawing the figure of a triangle, square, rectangle and circle with the help of familiar objects)	1.0	.66	.33	1.0

**Note** 1 represents the presence all subtopics in the textbook that have been mentioned in the curriculum for a particular topic and  
0 represents non- presence of the content in the textbook

The data reported in Table 4 is more or less similar to Table 3. The textbooks approved for the subject of Science do not completely cover the scope of contents mentioned in the curriculum. Topics on 'needs for plant growth' and 'modes of nutrition in animals' have not been covered by three of the four textbooks included in the sample. In the approved textbook published by Pursuit Publishers, a number of topics given in the national curriculum have not been included. This is the basic requirement for a textbook evaluation by any textbook approval agency. There are no restrictions as to formats, extents, number of colours etc., although submitting Publishers should note that the extents should be appropriate and sufficient to provide adequate coverage of the Curriculum and the

achievement of the Syllabus objectives” (Ministry of Education, Government of the Republic of Trinidad and Tobago , 2005). The data further discloses that merely providing the main contents of the curriculum to the authors does not ensure coverage of the topics demanded in the curriculum. This also reflects upon the working of the evaluators i.e. members of the National Textbook Review Committee. There is another possibility that the committee members might not consider content coverage demanded in the national curriculum while reviewing and approving the textbooks.

Table 4

Content Coverage in the Approved Science Textbooks with respect to the National Curriculum

Scope given in National Curriculum 2000	Quest Pub.	Teach Pub.	Pursuit Pub.	High Pub.
<b>Living Things</b> (Root system; Shoot system: Stem, Leaf, Flower; Flowering and non flowering plants; Needs for plant growth; Type of animals; Modes of nutrition in animals; Adaptive features of plants and animal; Resemblance of off springs with their parents)	.78	.67	.33	.89
<b>Matter and its Properties</b> (Grouping of material objects on the basis of their properties; Solids-Texture; Solids-Size; Solids-Weight; Liquids –Weight; Gases – Weight; Gases -Material objects occupy space and have weight)	1.0	.71	.29	1.0
<b>Motion and Force</b> (Effects of force; Friction)	1.0	1.0	1.0	1.0
<b>Energy</b> (Effects of heating; Rectilinear propagation of light; Transparent and opaque of objects; Production of sound; Production of sound by vibrating body)	1.0	.80	.40	1.0
<b>Electricity and Magnetism</b> (Electric charge; Magnet; Shapes of magnets)	1.0	.67	0	1.0
<b>Earth and Space</b> (Earth Material; Minerals; Change of landscape)	1.0	1	.33	.67

**Note** 1 represents the presence all subtopics in the textbook that have been mentioned in the curriculum for a particular topic and  
0 represents non- presence of the content in the textbook

### Compliance of the approved textbooks with regard to amount of time and weightage to the topics specified in the curriculum

A large part of the national curriculum guidelines give details with regard to the weightage to the concept and sub-concepts and the amount of time to be allocated in the timetable. In Table 5 concept-wise comparison of approved textbooks has been given with respect to time and weightage

allocated to the concepts in the curriculum. The comparison is based on the number of pages allocated for the description of the concept and exercises, their weightage and number of periods that would be allocated to that topic/concept.

Table 5  
Concept-wise Weightage in the Approved Textbooks of Mathematics for Grade 3

Main Concept	Sub concept	D demanded in curriculum		Coverage in terms of number of							
		Weightage in %	No. of periods each of 35 min	No. of Exercises in %				No. of Pages allocated in %			
				Quest Publishers	Teach Publishers	Pursuit Publishers	High Publishers	Quest Publishers	Teach Publishers	Pursuit Publishers	High Publishers
Numbers	Natural Numbers	10	27	11.3	10.2	11.6	5.4	12.7	10.5	16.2	5.7
	Common fractions	10	27	4.8	3.4	2.3	7.1	5.2	3.5	4.4	4.8
	Decimal fractions	10	27	4.8	5.1	0.0	3.6	3.7	7.0	0.0	6.7
Operations	Natural Numbers	10	27	29.0	32.2	46.5	25.0	26.1	29.8	32.4	15.2
	Common fractions	10	27	9.7	8.5	0.0	14.3	7.5	6.1	0.0	10.5
Measurements	Concepts			6.5	5.1	4.7	12.5	5.2	6.1	4.4	14.3
	Operations	8	22		8.1	10.2	9.3	3.6	7.5	6.1	8.8
Time		6	16	9.7	8.5	9.3	12.5	9.7	13.2	10.3	16.2
Money		6	16	3.2	3.4	7.0	5.4	2.2	3.5	8.8	2.9
Geometry	Concept	10	27	6.5	3.4	4.7	8.9	6.0	3.5	1.5	9.5
	Construction	10	27	4.8	8.5	2.3	0.0	7.5	5.3	1.5	0.0
Information Handling		10	27	1.6	1.7	2.3	1.8	6.7	5.3	11.8	7.6

Table 5 reveals that the number of exercises and pages assigned in mathematics textbooks to cover the scope of topics given in the national curriculum guidelines is not compatible with the time allocated to teach the topic and its weightage in the overall curriculum. The textbooks with less number of exercises were further analyzed with regard to estimated time required to solve these exercises. The difficulty level and thus the level of understanding of these exercises was low as compared to other textbooks. Hence these exercises required less time to solve as compared to other textbooks with more exercise, and relatively higher difficulty level in terms

of understanding, application and analysis. In Pakistan approved textbook is usually the only available resource to teachers and it is taught in a specific time that is same for almost all schools in the country. The variation in the above-mentioned text of the approved textbook may not be suitable to the existing set-up of the schools in the country.

It is important to mention here that the National Curriculum 2000 of Science for grades 1-5, which is being taught, does not give details about topic-wise weightage and time recommended for that particular topic, as in the case for mathematics. However, in order to observe consistency among approved textbooks, percentages of the exercise/activities and percentage of the number of pages allocated with regard to total number of pages can be seen in Table 6.

Table 6  
Concept-wise Weightage in the Approved Textbooks of Science for Grade 3

Main Concept	Sub concept	Coverage in term of % of numbers of							
		Exercises/Activities				Pages			
		Quest Pub.	Teach Pub.	Pursui <sup>t</sup> Pub.	High Pub.	Quest Pub.	Teach Pub.	Pursui <sup>t</sup> Pub.	High Pub.
Plants	Root system, Shoot system Flowering and non flowering plants	13.7	6.7	15.2	27.5	27.7	14.3	15.0	14.3
Animals	Type of animals	5.9	4.4	3.8	2.5	17.0	16.3	12.5	21.4
	Modes of nutrition in animals	0.0		5.1	0.0	0.0	0.0	2.5	0.0
Environment	Adaptive features of plants and animals	3.9	2.2	7.6	0.0	4.3	4.1	8.8	0.0
Continuity of Life	Resemblance of off springs with their parents	3.9	6.7	2.5	0.0	4.3	4.1	2.5	0.0
Matter and its Properties	Grouping of material objects on the basis of their properties	21.6	13.3	11.4	7.5	19.1	6.1	20.0	7.1
Motion and Force	Effects of force and Friction	15.7	6.7	13.9	30.0	4.2	10.2	7.5	10.7
Energy	Effects of heating	3.9	4.4	5.1	15.0	2.1	6.1	3.8	7.1
	Rectilinear propagation of light	3.9	8.9	6.3	15.0	2.1	6.1	5.0	3.6
	Transparent and opaque of objects	2.0		5.1		2.1	0.0	2.5	0.0
	Production of sound	5.9	8.9	8.9	0.0	2.1	4.1	5.0	0.0
Electricity and Magnetism	Production of sound by vibrating body	2.0	4.4	1.3	0.0	2.1	2.0	1.3	0.0
	Electric charge	2.0	13.3	7.6	0.0	2.1	6.1	3.8	0.0
	Magnet	11.8	11.1	6.3	0.0	2.1	10.2	3.8	0.0
Earth and Space	Shapes of magnets	0.0	0.0	0.0	0.0	2.1	0.0	1.3	0.0
	Earth material		2.2	3.8	2.5	2.1	2.0	2.5	35.7
	Minerals	3.9	4.4	2.5		2.1	2.0	2.5	
	Change of landscape		2.2	0.0	0	2.1	6.1	0.0	0.0

Table 6 indicates that in the approved textbooks there is significant difference in space allocation for presentation and elaboration of concepts and the number of activities and/or end of unit/chapter assessments. The

approved textbooks both in the private and public sectors have given different amounts of space for the explanation of the same topics. One of the approved science books has given an extra topic 'Needs for plant growth' for which 2 out of a total of 28 pages of the book have been allocated.

As mentioned earlier, an approved textbook may easily become the curriculum in the classroom. Considering this notion, it could be a big problem for that teacher who does not have a textbook written in accordance with the parameters set in the National Curriculum. Reints (2002) emphasizes the ultimate function of a product as one of the major considerations for assessment criteria to ensure the quality of the product. According to him, the instructional functions of teaching materials [textbooks] depend on the manner in which teachers intend to use these materials. Although the amount of time allocated for the teaching of each topic is the same as it has been fixed by the ministry, different amount of content given in each of the approved textbooks to deliver in the allocated time.

### **Format of the approved textbooks**

National Curriculum (2000) for the subject of science has described the features regarding design, illustration and format of science textbooks. Under the heading of 'general instructions to authors for presentation of textual materials', it has been advised that 'attractive and colorful photographs/illustrations be given to captivate students' (p.3). There are no other guidelines or instructions for textbook developers regarding format of textbooks at a particular level. Regarding the format of the textbooks, no guidelines have been provided for Mathematics. In Table 7 general features with respect to format/design and appearance of mathematics textbooks included in the sample are given.

Table 7 discloses that there is a variation in approaches for layout, quality of paper, title, page layouts, gender and local context, presentation of culture, use of letter type and size of font, printing. For example, some books, text layout is jumbled and others have quite tidy and unwrapped layout. Similarly placement of the pictures, line diagrams and other figures have no set pattern in the approved textbooks. There is no consistency among the books in regard to font type and size. Some books follow Time New Roman style while others consider Arial style as appropriate one. There is no uniformity with respect to printing of these books. Some books opt for two-color printing and others consider four-color more appropriate. The quality of the paper used in almost all the books is not of the level suggested for this age group and required life of the textbook. Nevertheless, the paper chosen for printing of different books is of different quality. Majority of the sampled textbooks do not properly focus on cultural values of the society for which these books were developed. There was hardly any instance of attempting to promote our national culture and values.

Table 7  
Format /Design-wise Description of the Approved Mathematics Textbooks

Feature	Quest Pub.	Teach Pub.	Pursuit Pub.	High Pub.
1. Title appearance	Good	Average	Good	Good
2. No. of colours used in the printing	4 Colors	2 Colors	4 Colors	4 Colors
3. Font type of the running text	Arial	Arial	Gilson	Veranda
4. Font size of the running text	12	14	14	14
5. Page layout	Logical	Partially Logical	Logical	Arbitrar y
6. Reflection of local culture	Not found	Not found	Fair	Good
7. Gender consideration	Fair	Good	Fair	Fair
8. Nature of pictures (art /real)	Art	Art	Art	Art
9. Paper quality	55-65 gram	Below 55 gram	Above 65 gram	Below 55 gram
10. Page size	7" x 9.25"	7.5" x 10.25"	8.25"x1 1"	7.5"x10. 5"
11. Binding	Gum Binding	Side Pin with Spine	Center Pin	Gum Binding
12. Quality of picture	Average	Below average	Good	Average

In case of science textbooks, differences with respect to format and appearance are the same as in the case of the mathematics textbooks. Features with respect to format and appearance of science textbooks included in the sample are given in Table 8.

Table 8  
Format feature-wise description of the Approved Science Textbooks

Feature	Quest Publishers	Teach Publishers	Pursuit Publishers	High Publishers
1. Title appearance	Good	Average	Good	Good
2. No. of colors used in the printing	4 Colors	4 Colors	4 Colors	4 Colors
3. Font type of the running text	Arial	Arial	Arial	Arial
4. Font size of the running text	12	14	16	12
5. Page layout	Arbitrary	Partially Logical	Logical	Arbitrary
6. Presentation of culture	Average	Good	Average	Good
7. Gender consideration	Fair	Good	Fair	Fair
8. Nature of pictures (art /real)	Combination	Mostly Art	Art	Mostly real
9. Paper quality	Below 55 gram	Below 55 gram	Good	Below 55 gram
10. Page size	7" x 9.25"	7.5"x 10.25"	8.25"x11"	7.5"x10.5"
11. Binding	Center Pin	Center Pin	Center Pin	Gum Binding
12. Quality of picture	Below average	Average	Better than average	Good

Table 8 reveals that there is uniformity among the approved textbooks with respect to type of font used in these textbooks. Textbooks are prescribed for a certain period of time for which a specific grammage of paper is recommended for printing the textbooks. Similarly another determinant of the quality of paper used for textbook printing is the grade and age of the student. Most of ministries and departments that handle textbook evaluation in their respective country give major focus on the format and graphics of the textbooks (American Textbook Council, 2002); Department of Education-DepED, Textbook Policy, 2004; National Institute for Educational Development-NIED, 2005); Nogova and Huttova, 2006); Ontario Ministry of Education, 2006; Rotich and Musakali, 2006; Ministry of Education- Division of Textbook, 2009). The Division of Textbooks even gives more focus on the importance of illustrations and format by stating the publications function to; a) deliver the message of the texts (concepts / facts); b) assist in understanding the texts; c) reinforce understanding of the texts; d) complement the texts; e) provide additional information; f) facilitate student's memory of important concepts / facts; g) enhance students' mind in learning; and h) provide aesthetic values. In the case of Pakistan, there is a lot of variation observed in the use of quality of the paper used for printing of the textbook for the same grade and age level of the students. The review committee members might not be following any standard format and design in textbooks while evaluating them. In the Curriculum report, guidelines for using font size and paper size for a particular grade are not specified. This reflects there might be lack of criteria within the Ministry for standardization of textbook features with respect to its presentation and printing.

## **Findings of the Study and Discussion**

In Pakistan, Federal Ministry of Education approves textbooks for classroom use after their evaluation. The ministry constitutes National Textbook Review Committee for this task. The ministry provides curriculum guidelines as a reference document, while reviewing official documents at the ministry of education, no other explicit criteria could be traced for the evaluation task.

Inconsistency in the curriculum guidelines was observed while reviewing it. For example the Science Curriculum Guidelines (2000) for grade 1-5, does not give details about topic-wise weightage and time allocated to that particular topic, as is the case for Mathematics. There was lack of homogeneity with regard to the level of understanding demanded by each of the approved textbooks. Also, there was inconsistency among the approved textbooks with respect to required level of understanding. The criteria given to the National Textbook Review Committee to evaluate textbooks with respect to conformity of the curriculum objectives apparently were not explicit for all members of the committee (Tables 1 and 2). Proper coverage of scope of the content in the approved textbooks was also an



issue. In some books, it had not been covered completely and in some of textbooks, topics other than those mentioned in the national curriculum were included (Tables 3 and 4).

Approved textbooks were inconsistent with respect to the number of exercises and pages assigned to cover the scope of topics given in the national curriculum guidelines as per time allocated to teach the topic and its weightage in the overall curriculum. The elaboration of concepts and the number of activities and/or end of unit/chapter assessments of same topics also varied in the approved textbooks. Although the amount of time allocated for the teaching of each topic is the same, as it had been fixed by the Ministry. This phenomenon highlights the importance of the objective and clear guidelines for textbook evaluators and reviewers. The approved textbooks both in the private and public sectors have given different amounts of space for the explanation of the same topics (Table 5 and 6). The textbooks with less number of exercises were further analyzed with regard to estimated time required to solve these exercises. The difficulty level and thus the level of understanding of these exercises was low as compared to other textbooks. Hence these exercises required less time to solve as compared to other textbooks with more exercises, higher difficulty levels and levels of understanding (Table 5). There was a difference with respect to format/design and appearance in the approved textbooks. Different approved textbooks adopted different approaches to layout, quality of paper, title, page layouts, pictures and line diagrams, presentation of culture, use of letter type and size of font, printing etc. (Tables 7 and 8).

The prevailing textbooks in the country that are approved by the ministry show discrepancies on the above-mentioned characteristics. One of the major causes is the curriculum guidelines of different subjects are inconsistent with regard to different dimensions mentioned earlier. Different approaches adopted by the authors may need different pedagogical approaches to deliver the textbook in the classroom. This issue could potentially explain the effects of disorientation and lack of ability to make meaning out of the relevant textbooks experienced by many students (Alexander & Kulikowich, 1994; Keys, 1999; Patterson, 2001; Yore, Craig, & Maguire, 1998). Similar problems of disorientation during instruction have been revealed in some empirical studies in the field of sociology of education (Apple, 2002; Morais, 2002; Morais & Miranda, 1996). Furthermore, the ministry has no set standard for format and design of textbooks. Guidelines for using font size and paper size for a particular grade are not well-specified. There was lot of variation in the paper quality that is used for printing of the textbooks. There is lack of compliance with objectives of the curriculum in the approved textbooks. There is lack of homogeneity with regard to the level of understanding demanded by each of the approved textbooks. Nevertheless the end users of all the textbooks, that is, teachers have almost the same background and academic support

available to them.

## Conclusions and Recommendations

In a good curriculum, the component of learning materials including textbooks is considered as one of the most important aspects. In fact, materials play a vital role in achieving objectives of the curriculum. Textbooks are the backbone of classroom instruction especially at the primary level. In the light of the provisions given in the National Textbook and Learning Materials Policy and Plan of Action (Govt. of Pakistan, 2007), healthy competition is required in textbook development to ensure the quality and effectiveness of textbooks. It demands a culture in which use of multiple textbooks is a common practice. The approval of various textbook series by the Ministry of Education is an encouraging sign for developing quality textbooks. Although diversity is desirable, it can be detrimental in the absence of standard criteria for approval of textbooks.

In-consistency in the approved textbooks reflects upon the inconsistency in the textbook evaluation process in the country. This means the either the ministry is not able to convey the explicit criteria to the evaluators or the evaluator(s) do not have enough understanding of the taxonomy of the cognitive domain. There is also possibility that reviewers do not have enough expertise to understand, how to analyze the text with respect to cognition development. The results point out that merely providing the main contents of the curriculum to the authors does not ensure coverage of the topics demanded in the curriculum. This also reflects upon the working of the evaluators i.e. members of the National Textbook Review Committee. They do not ensure content coverage demanded in the National Curriculum while reviewing and approving the textbooks. Therefore the ministry should provide explicit guidelines not only to the committee members but also to textbook writers and publishers. In order to bring more objectivity in the evaluation/ review processes of the curriculum, a pool of experts should be developed from which committee members could be selected. The analysis of approved textbooks has shown several important factors necessary for the more objective and transparent textbook approval system.

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