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Critical Analysis of the Science Text Book of Class Ix
(A case study of Balochistan Text Book Board)

Education

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ABSTRACT

The purpose of the study was to critically analyse the text book of Physics for class IX in secondary school. The scope of study was limited to subject teachers and text book of class IX. The strategy used was mixed research approach. A Taylor made questionnaire was designed comprising of 15 items. Document analysis was done. Data was analysed statistically. It was found out that the text of Physics taught at public lacked clear reflection of the content in accordance with the subject level of the students. In the light of the findings concrete recommendations were made.

Keywords: *Analysis, Text Book, Balochistan, Text Book Board*

Introduction

The purpose of the study was to critically analyse the text book of Physics for class IX. The text book was published by Balochistan Text Book Board, Quetta. This text book was written for the students of class IX in accordance with approved syllabus published by the National Bureau of Curriculum, Ministry of Education, Government of Pakistan, Islamabad,

under the sponsorship of Balochistan Text Book Board, Quetta This is an official text book for class IX in Pakistan in general and for the entire province of Balochistan in particular. The purpose of this text book is to introduce the students the fundamental laws and principles of Physics with their applications. The language through out the book is simple, straight forward, easily understood and is of the level of the students. Numerous solved examples have been included to illustrate the application of various theories. Some questions and a number of unsolved problems are also incorporated at the end of the chapter. The authors have unsparingly consulted various pertinent references and text books related to the content. The content included in this text book are: Measurement, Kinematics of Linear Motion, Motion and Force, Vectors, Equilibrium, Circular Motion And Gravitation, Work, Power and Energy, Simple Machines, Properties of Matter, Heat, Waves and Sound, Propagation and Reflection of Light, Refraction of Light and Optical Instrument, Nature of light and Electromagnetic Spectrum, Electricity Magnetism and Electromagnetism, Electronics and Nuclear Physics.

The research questions which the study is based on are as follows

1. Does the content of the text book cover all the topics prescribed in the curriculum?
2. Does the content of each topic help enhancing the knowledge pertaining to the topic?
3. Are the topics as per the understanding level of the secondary level of the students?
4. Is there coherence in the content of each topic as per the content taught in the previous classes?
5. Are the sub topics of each main topic in ascending level of understanding?
6. Are the diagrammatic representations any help in understanding?
7. Are the diagrams apt and clear?
8. Does the quality of the book appeal to the students?
9. Is the content of each sub topic relevant to the main topic?
10. Is the content of each sub topic enough to make the students understand the topic?
11. Is the language easy for the students to understand and not even of a very low level?
12. Are there grammatical errors in the content?
13. Are the questions given at the end of the chapter of any help?
14. Are the questions enough for giving a good practice?
15. Over all is the text book worth a secondary school level?

Literature Review

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) (Rabbani, 2003).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 in-experienced 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 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

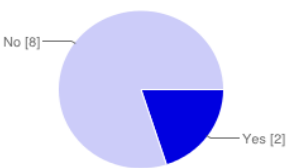
in teaching, learning and evaluation of students" (p.3) In order to solve this problem the government felt the need for multiple textbooks and decided to revive the policy followed until the early Sixties. In view of this, the National Education Policy of Pakistan 1992 highlighted the need for multiple 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)

Methodology

The strategy of research was mixed research approach. The population comprised of all subject teachers and text books of Physics taught at the secondary level. The population was heterogeneous. Stratified Random Sampling was adopted for selection of subject teachers whereas purposive sampling was used for selection of text book. The overall size of sample was 10 senior teachers along with the sample of content taken from textbook. A questionnaire comprising 15 items was designed. The items were drawn in consultation with experts in the field. The procedure ensured the content validity of the instrument. Data was analysed by using qualitative and quantitative techniques.

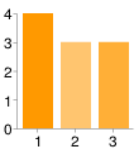
Data Analysis

Does the content of the text book cover all the topics prescribed in the curriculum?



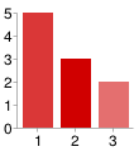
Yes	2	20%
No	8	80%

Does the content of each topic help enhancing the knowledge pertaining to the topic?



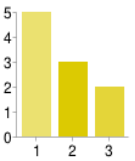
1	4	40%
2	3	30%
3	3	30%

Are the topics as per the understanding level of the secondary level of the students?



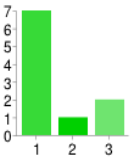
1	5	50%
2	3	30%
3	2	20%

Is there coherence in the content of each topic as per the content taught in the previous classes?



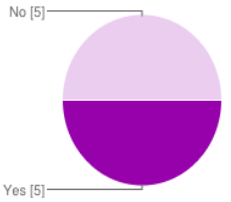
1	**5**	50%
2	**3**	30%
3	**2**	20%

Are the sub topics of each main topic in ascending level of understanding?



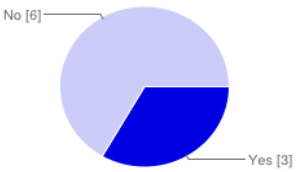
1	**7**	70%
2	**1**	10%
3	**2**	20%

Are the diagrammatic representations of any help in understanding?



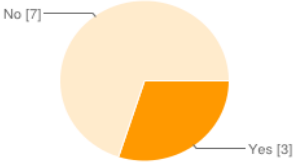
Yes	**5**	50%
No	**5**	50%

Are the diagrams apt and clear?



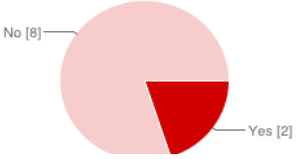
Yes	**3**	33%
No	**6**	67%

Does the quality of the book appeal to the students?



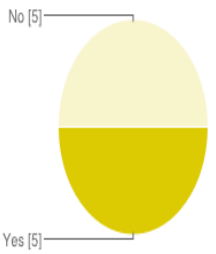
Yes	**3**	30%
No	**7**	70%

Is the content of each sub topic relevant to the main topic?



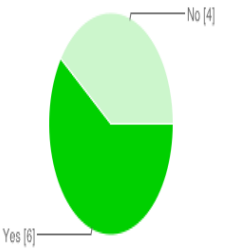
Yes	**2**	20%
No	**8**	80%

Is the content of each sub topic enough to make the students understand the topic?



Yes	5	50%
No	5	50%

Are there grammatical errors in the content?



Yes	6	60%
No	4	40%

Summary, Conclusion And Recommendations

Curriculum, in a wider sense, is aligned with the education policies of Pakistan. This chain of process of alignment then follows till the stakeholders involved in deciding the content of the text books and what is required to be published or not. The question arises whether there is definite alignment being traced till the last level. This critical analysis was based on scrutinizing the Physics text book of class IX. Throwing light in all areas of the book will help us understand the loopholes and positive points as well.

Keeping in mind the content of the text book, 80% of the respondents believe that there is mismatch in the topics of the text book and the curriculum. The content of the sub-topics in any chapter is elaborative. However, when it comes to relevance, there is a dire need to realign the content with practical implications of Physics. As an example, Chapter 1 highlight contributions of Muslim and Pakistani scientists and the content that is mentioned about emphasized more on personal details instead of their contributions. Another example includes the lack of practical implications of nuclear Physics. It does not imply how this can be utilized to produce electricity and creating awareness of how drone technology and nuclear bombing has its adverse effects.

Language of the book needs improvement. There is a broad spectrum of opinions in this regard. There have not been many changes in the wordings of the book since years. If the structure is focused, there is a problem in parallelism, coherence and unity. This is primarily the reason why it makes the book unfriendly to its users.

Aesthetically, the book has been organised in an order. However, potentially there is a need for a better quality printing as Physics has diagrammatic representation. Vernier calliper, for example, has readings that are difficult to see due to poor quality printing. Considering the index, the topic kinaesthetic covers vector and then separately there is an entire topic of vectors. Thus, organisation is required.

Textbooks of public sectors are not according to prescribed curriculum. This is the case in the Physics text book analysed. The language throughout the book is simple, straight forward, easily understood and is of the level of the students. The authors have unsparingly consulted various pertinent references and text books related to the content. The content included in this text book are reasonable, however, the dark areas are yet to be catered.

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