

Effective Use of Textbooks: A Neglected Aspect of Education in Pakistan

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Given the significant role that textbooks play in many countries of the developing world, the paper highlights issues related to the use of the textbook in rural Pakistan, and identifies ways to improve upon current practices. The findings presented in this paper emerge from our analysis of teachers' experiences and practices related to the use of Science textbooks in public schools. Since the existing knowledge base is limited on teachers' actual use of the textbook, the paper attempts to fill in this gap by highlighting the various issues related to teachers' perceptions and practices. These include teachers' limited use of textbooks, access to textbooks, information gaps and limitations of textbooks – all working to restrict the use of the textbook as a learning resource. The paper concludes by offering recommendations on improving textbook usage in Pakistan.

Keywords: *Textbooks, Teacher Training, Pakistan*

INTRODUCTION

“The textbook is, in fact, the heart of the school and without the ubiquitous text there would be no schools, at least as we know them.”
(Ian Westbury, cited in Oakes & Saunders, 2004)

Given the significant role that textbooks play in many countries of the developing world, the paper highlights the need for improvement through discussing issues related to access and use of the textbook in a rural context in Pakistan. The findings presented in this paper emerge from our analysis of teachers' experiences and practices related to the use of science textbooks in their classrooms.

This paper highlights the various issues related to teachers' perceptions and practices, for example, their limited use and appreciation of the textbook, access to textbooks, various

information gaps and limitations of the textbook – thus, restricting the textbook’s use as a helpful learning resource. The issues have serious implications for teaching and learning outcomes in a context where teachers and students have limited access to any other instructional materials. Since it is imperative that the textbook plays a pivotal role in rural public settings, this paper argues that school improvement in such contexts should be based on textbook reform.

The paper offers some recommendations to improve the textbook and suggests ways to turn it into a powerful tool for teaching and learning. It is envisaged that this discussion will help teachers, teacher educators, textbook writers and policy makers to review and reflect on their role in bringing reform to the existing situation. We conclude that although various innovations and inputs are being made in the area of teacher education, without facilitating teachers in making effective use of the textbook, learning outcomes cannot be achieved, as teachers’ ultimate decisions are made on the basis of the textbook.

THEORETICAL PERSPECTIVE

Textbooks are at the heart of educational enterprise, as they offer students “a rich array of new and potentially interesting facts, and open the door to a world of fantastic experience” (Chambliss & Calfee, 1998, p.7). The literature provides evidence of the significant role of textbooks as “primary vehicles for delivering content knowledge, for determining in large measure what goes on in a class” (e.g. Hummel, 1998, cited in Lebrun, Lenoir, Laforest, Larose, Roy, Spallanzani & Pearson, 2002), and for assessing what students do and do not learn (e.g. Freeman & Porter, 1989, cited in Oakes & Saunders, 2004). It has been identified that access to and availability of textbooks is a particularly significant factor in predicting academic achievement (Heyneman et al, 1978, cited in Oakes & Saunders, 2004).

In this post-modern world of technological advancement, rapidly changing markets and increasing competition, teachers are faced with new academic and pedagogical challenges. In order to prepare students, teachers must teach more challenging and extensive subject areas, develop different instructional strategies and reach a wider range of students. Having a high-quality curriculum to guide instruction is an important part of meeting these challenges. Therefore, curriculum reforms need to take place in such a way that gaps between the curricular framework and the textbook are bridged and the needs of learners from diverse backgrounds are reflected in curricula and textbooks. Curricula and the textbooks should be more meaningful and relevant for the life experiences of the students and should prepare them for real life.

Certainly textbooks need improvement; what aspect of the profession of schooling doesn’t? And certainly teachers need help in making intelligent use of the textbooks we have and those the future will hold for us. And certainly students, especially, the more capable ones, should be led to see textbooks as only the beginning, a springboard for further explorations into other sources of knowledge. (Maxwell, 1985, p.73)

The centrality and dominance of textbooks, especially in the context of developing countries, has been reiterated and highlighted by various writers. Maxwell, for example, identifies their role as

the *organizing centers* for the instructional program and as the most dominant element in classrooms aside from teachers, students and physical space: "The text determines what is taught, when it is taught, and how it is taught" (1985, p.68). The Organization of Economic Cooperation and Development (OECD), the World Bank (WB) and the United Nations Educational, Scientific, and Cultural Organization (UNESCO) also recognize the central importance and role of textbooks in the context of developing countries and disadvantaged contexts. The World Bank, for example, suggests that reforms be initiated in relation to textbooks in developing countries; textbooks being a "critical part of education, as necessary as classroom itself, as indispensable as the classroom teacher" (De Guzman, 2000, cited in Oakes & Saunders, 2004). Similarly, research in the area of teacher education in Pakistan indicates that teachers mostly teach to impart basic knowledge or textbook content to students. Such an approach typically results in poor academic performance (for example, see Mohammad, 1994). Some research does identify a positive link between student achievement and the role of textbooks (e.g., Fuller & Clark, 1994; Fuller & Heyneman (1989) cited in Oakes & Saunders, 2004).

As evident from the above discussion, textbooks serve a central role in educational quality reform. Abbas (1993) reported on several attempts that have been made to update Pakistani textbooks in order to address students' needs and improve quality. What is missing from these attempts, however, is an emphasis on exploring the relationship and interaction between textbooks and the teacher; and how they make use of this resource, (i.e., to identify whether the books actually work as designed, whether teachers can make use of the textbooks as intended, and whether students truly understand the material) (Maxwell, 1985). While Maxwell uses the term "learner verification" of textbooks (1985, p.70); the discussion in our paper suggests 'user verification', that is, to also involve teachers in assessing textbooks, as it is the teachers who adapt the textbook and determine how to make use of this resource.

The existing literature does not shed light on this relationship between textbooks and teachers' actual practice. Lebrun *et al.* (2002) highlights this gap when they write:

neither textbooks' classroom use..., their impact on practices, nor the effects of their use on school learning, are really known....[The] literature is deafening in its silence on classroom methods of the use of textbooks by elementary-school teachers and, indeed, by high-school teachers. (p.71)

Despite on-going discussions regarding the place of textbooks and related reform, there is a dearth of examination of teachers' practices related to the effective use of the textbook for developing teaching and learning practices. The findings discussed in this paper attempt to fill in this gap by highlighting some limitations of the content presented in the textbook and its access but, more importantly, by examining issues related to teachers' limited use of textbooks. Some issues, for example, are related to content of the textbook, whereas, others are related to teachers' limitations in terms of content and pedagogical content knowledge. The discussion in this paper makes suggestions to teachers, teacher educators, authors and policy makers to review and reflect their contribution in textbook design, use and enrichment.

THE CONTEXT

The research participants were teachers from the government sector in the rural context who participated in an in-service teacher education programme offered by a private university in Pakistan. They had resumed their respective positions after the completion of an in-service teacher education programme and were involved in improving the teaching and learning situation in their respective institutes.

The schools, where these teachers and teacher educators were placed, had limited resources for teaching and learning. For example, the children would be seated on the floor or various grades or levels would be combined in one small room due to shortage of space, furniture or teachers. They had very limited exposure and access to any resources other than the textbook. While the Government of Pakistan provides free access to education, due to poor coordination (at provincial and district level), a limited number of books were provided. Those books that are provided often do not reach the students on time. Students, without textbooks, would get punished by the teachers, resulting in absenteeism. Teachers relied on the textbooks to an extent that teaching and learning would not take place in the absence of the textbooks.

The examples presented in this paper emerge from our analysis of (a) teachers' use of Science text books in the classroom (levels I to VIII), and (b) pre and post conference discussions with the teachers, where they reflected on their practices, the use of the textbooks and limited learning outcomes.

FINDINGS AND ANALYSIS

Our analysis of data identifies textbook related issues in terms of two categories:

1. Limited access to the information given in the textbook, i.e., issues related to its clarity and relevance for the students and teachers;
2. Teachers' limited use and appreciation of the textbook content, i.e., of the information as well as learning aids (pictures and activities) provided in the textbook.

'Access' in our paper has been defined in terms of the various gaps in the textbook content that restricted teachers' and learners' access to the information. Issues related to 'use' refer to teachers' inability to utilize the textbook effectively, resulting in failure to teach the scientific concepts in an effective way.

Issues Related to Access

Our review uncovers various gaps in the textbooks, for example, lack of clarity of language as well as inadequacy of information given in the textbook. It was noticed in some instances that the language used in the textbook did not clearly define the concepts presented and since the

teachers were also unable to understand it, they inadequately communicated the given information to the students. This is reflected through a number of examples provided below.

- **Example 1.** The concept of ‘lever’ was defined in a Science textbook as a “strong rod or stick on which force is applied on its one end and can be rotated through some support and work is done on the other end.” (Science textbook for Class V, Baluchistan Textbook board, p. 65).

In the above example, it was difficult for the teacher to see how this definition of ‘lever’ could qualify it as a machine when, according to the given definition, force was being exerted on one end and work was also done on the other end (and not ‘through’ the other end); the notion of ‘input’ and ‘output’ did not get clearly communicated through this definition. Since the teacher lacked adequate scientific knowledge, he could not identify the linguistic error in this definition and, therefore, asked the students to memorize the definition as it was given in the textbook without helping them understand the scientific notion.

There were also examples where the information provided in the textbook would either be incorrect or there would be a misprint creating a barrier to understanding the concept.

- **Example 2.** The Science textbook states, “In the Fahrenheit scale, the freezing point for water is 273 degree Kelvin and boiling point is 373 degree Kelvin. In the Kelvin scale, the freezing point for water is 32 degree Fahrenheit and boiling point is 212 degree Fahrenheit.” (Science Textbook for Class VIII, p. 135)

In the above example, instead of *Fahrenheit scale*, the first statement should have mentioned *Kelvin scale*; similarly, the second statement should have mentioned *Fahrenheit scale* instead of *Kelvin scale*. This could be a case of a simple misprint; however, it was difficult for the teacher to identify the error on his own until it was discussed with him.

Similarly, in some cases, teachers felt that the suggested experiments or activities to explain scientific concepts or phenomena required equipment that were inaccessible to the teachers and the students in such contexts. For example, a teacher referred to one of the proposed experiments in the textbook to explain ‘Air Pressure’, where the experiment required scientific equipment and relevant expertise to operate this instrument. However, it was difficult for the teacher to conduct this experiment due to non-availability of the required equipment in his context as well as his own non familiarity with the device. Therefore, he viewed the content as irrelevant and meaningless for his teaching. The implications of these gaps were that the teachers would either ask the students to leave those topics or would teach them without clarifying the misconceptions; this, in turn, limited teaching and learning to rote-memorization of the given information.

Teachers’ Limited Use of Textbook Content

Our findings and analysis suggest limited use of the textbook by teachers. In many ways, this limited use was a reflection of their lack of appreciation and acknowledgement of the textbook as a useful resource. There are examples in our data set that suggest that in some cases, it was

difficult for teachers to make sense of the information given in the book, or to appreciate the resources/examples provided to meaningful learning.

- **Example 3.** One of the assessment tasks/questions given in the Science textbook was, “What angle does the liquid pressure form with the inner surface of the container?”¹ (Q. iii-A, page 125, Science Textbook for Class VIII, Baluchistan Textbook Board, Quetta). Although it was mentioned in the textbook that pressure is exerted perpendicularly on the surface of the liquid (pg. 122), the teacher was not able to understand and link it to the question asked. He felt that the assessment task was too complex for students since no relevant information was provided in the chapter to respond to the question. Therefore, he asked the students to leave the question.

Similarly in some cases, despite the content being adequately lengthy, appropriately detailed and according to the level of the students, teachers either provided very brief information or asked the students to read only a specific section in the chapter. For example, one of the teachers taught a lesson on Computer Technology from a science textbook. The textbook gave a detailed explanation of what a computer was, how it worked, its various uses, and similarly detailed discussion on other technological devices. The teacher, however, provided very basic and brief information, which was not appropriate for target grade level (Grade 10). The teacher also left out the information about the various other devices discussed in detail in this chapter and focused mainly on the sub-topic ‘computer’. Our analysis revealed, however, that the teacher was not conversant on technology topics. As such the teacher only taught lessons on topics that she was aware of. Since she was not familiar with computer technology and the other devices discussed, she provided limited information to the students, ignoring the rest of the content in the textbook.

We also noticed that in the Science textbooks, some concepts were discussed through colorful pictures, practical activities and simple experiments. In addition, in some cases, the textbook offered detailed and appropriate explanation and relevant assessment tasks to build students’ knowledge. The implicit purpose seemed to enable students to learn appropriate scientific information through observation, visual images and experimentation.

- **Example 4.** One of the teachers wanted to teach the topic *Janwar Aur Un Ke Bachhe* (Animals and their Babies) through active students participation. The textbook was full of pictures, showing animals and their babies to indicate their likeness to their parents (cf. Science textbook for Class V, Baluchistan Textbook Board, Quetta, p.2); however, the teacher did not make use of them nor did he appreciate the richness of the content presented in the textbook. He taught the lesson in a very traditional manner by reading the information given in the textbook and asking students to memorize the information. The teacher neither involved the students in any kind of activity nor did he use any other resources during the lesson.

In the follow-up discussion, the teacher identified non-availability of resources such as “charts and colorful pictures” (e.g. of animals and their babies in this case) as limiting the learning outcomes since he viewed “showing pictures” as an aspect in helping students understand the topic better i.e. through linking the factual knowledge to the visual images for sustainable

¹ The language used in the textbooks in this context is Urdu and has been translated.

learning. The teacher believed that he could have taught the lesson in a better way only if he had been provided colorful pictures and charts to display.

In other instances, we observed that while teachers conducted small experiments in the classroom in order to provide meaningful learning, they did not acknowledge the textbook as a source for such activities, despite the same experiment being given in the textbook.

- **Example 5.** One of the teachers taught a Science lesson on Electricity to level 5 students. In this lesson, the teacher planned various small activities for the children to better understand the topic. For example, the teacher demonstrated the flow of current from high potential to low potential through an experiment, showing the flow of water from high level to low level. The teacher explained the concept of conductors and insulators through an experiment of placing different materials in the circuit to indicate whether they could allow current to flow or not.

Since the teacher had learned the specified experiment in a training session he had attended earlier, he acknowledged the role of these trainings as having helped him in learning such experiments. We were also informed that for the topics not taught in their trainings, the teachers fall back on traditional methods, namely rote-memorization.

DISCUSSION

The examples discussed above suggest that some topics in the textbook included a variety of learning aids and resources (pictures, activities, experiments) and appropriate explanation of the topics to promote conceptual understanding. The teachers, however, could neither make effective use of these resources nor did they acknowledge the value of these resources for teaching and learning in their classrooms. In addition to teachers' limited use, there were also problems related to the quality of content provided in the textbooks; however, the teachers were not able to clarify those errors or mistakes on their own. Similarly, there are examples that suggest that the teachers would not teach the chapters or content that they themselves were not familiar with. Our analysis suggests that the teachers' limited understanding of the scientific concepts and limited pedagogical content knowledge did not allow them to make sense of the information or activities provided in the textbook. For example, it is evident from one of the examples discussed above that the teacher found a mismatch between the proposed assessment and information provided in the main text. In addition, our analysis also suggests that the teachers did make use of the textbook on regular basis but it appears that they did not spend any time to read, conceptualize and plan the topics.

Textbooks are written on the basis of some assumptions about the teachers and learners that these are intended for. One of these assumptions is that all teachers have the basic and necessary content knowledge to understand and interpret the textbook information correctly. Our findings suggest that this assumption is often incorrect in rural settings. In this context, it was difficult to find qualified teachers; the teachers recruited would mostly be the graduates from the same schools, therefore, their exposure and knowledge was very limited. This also raises an issue of the textbook authors' own limited approach towards and understanding of constraints of the

teachers and their contexts. For example, we mentioned that the authors had included various practical activities and experiments for some topics; however, some of the equipments suggested reflect either a lack of concern or a lack of awareness on part of the authors regarding the non-availability of such materials in rural contexts where even basic living facilities could be scarce. The authors seem more concerned about inclusion of the scientific concept in the textbooks, however, without appropriate integration of the activities with the local resources and realities.

Teachers' perceptions and attitude towards the value and use of the textbook along with their limitation of subject knowledge emerge as one major factor that hindered teachers' effective use of the textbook; we noticed that they acknowledged other learning resources (e.g. training, use of chart, etc.) but did not perceive textbook as an important teaching and learning resource. If we reflect on the question of where these perceptions are coming from or how these perceptions are formed, one possible explanation seems to be the role of the various teacher training programmes or courses. This could be an unintended outcome of the teacher training courses that encourage teachers to go 'beyond the textbook' and think of alternate ways to enrich the teaching and learning practices. Teachers' use of the textbook as the 'only resource in the classroom' has been strongly criticized in the training programs due to its limited outcomes. Teacher educators, therefore, suggest the use of alternate approaches and additional resources for curriculum enrichment. Could it be the case that the teachers somehow get the impression that the textbook does not have much importance or could not play an important role in providing children opportunities for meaningful learning? As a consequence, although the teachers are relying rather heavily on the textbook due to non-availability of any other instructional material - holding on to it as a prescription, they do not use it for effective teaching and improved learning outcomes.

Thus, it is evident from the discussion above that in a context where the teachers are not qualified, where the students also come from low-income backgrounds or underprivileged areas and do not have access to any other resources, textbook takes a central and important place. However, the various issues identified in relation to the access and use of the textbook create hindrances for it to become a helpful resource to promote teaching and learning in the rural context as it would have been otherwise. Therefore, in the light of the issues identified, we make some suggestions in the following section for teacher educators, textbook writers and other educationists to bring reform in the current situation.

RECOMMENDATIONS

The discussion in the paper points to teachers' limited content knowledge and language difficulties in relation to understanding and interpreting the knowledge provided in the textbooks. Therefore, textbook writers and editors have huge responsibility to ensure clarity of language, provision of adequate information, taking care of any misprinting errors or typos. In addition, they should also ensure that the textbook provides adequate methodological guidance and input to the teachers; this could, for example, include suggesting effective ways to teach the content, specifying the underlying teaching and learning philosophy, stating the achievement outcomes of the proposed methods, proposing appropriate methods for assessment and ensuring that there is link between teaching and assessment methods. The teachers need to know what

main concepts, insights and theories the students need to learn and why and what should be the learning outcomes of any particular concept discussed in the book. They need to know the justification of the approach and vision of the authors and editors in order to understand and be convinced that the proposed methods would help them achieve their learning goals. The current textbooks used in this context, on the other hand, mostly provide a list of topics and suggest activities or relevant explanation but do not specify the learning outcomes and objectives.

The textbook does not stand alone; teachers do need a manual with specific information about how to begin, conduct and end each lesson given in the book. In the absence of any additional teacher resource books or teaching manuals, it is proposed that textbooks should include discussion to explain how the suggested activities and content meet the curriculum objectives. Also, since teachers in the public sector in Pakistan do not have access to the national curriculum document, provided only to textbook writers for their guidance (Bano, 2005), it is imperative that the textbook writers have an additional responsibility to ensure that the textbook reflects the aims and objectives of the national curriculum. The textbook should also make suggestions for adapting activities and materials relevant and appropriate to their specific context or circumstances. The suggestions regarding alternative methods, approaches and resources would facilitate teachers in their decision making regarding the relevance and appropriateness of these activities and resources for their contextual realities. In addition, inclusion of some other supplement sections, for example, a section on assessment tasks (students' workbook) would also facilitate in maximizing opportunities for students to practice, understand and further investigate the concepts taught.

As already discussed, it seems difficult to ignore the possible role that teacher-training programmes might have played in promoting current practices or perceptions towards textbooks. Teacher training in Pakistan mainly focuses on pedagogy and/or subject knowledge, depending on the nature and purpose of training. Such trainings would mostly involve, for example, facilitating teachers to teach through group work and use of concrete resources (e.g., such as models, charts, and pictures); teachers are encouraged to go beyond the textbook in an attempt to enrich it. However, while the limitations and gaps of textbooks are discussed and emphasized in the trainings, teachers are often not trained to make effective use of the textbooks. Therefore, when the teachers go back to their schools, they either continue teaching with the same gaps and limitations or stop considering textbooks as a useful resource. It is imperative that teacher training should improve teachers' abilities in making effective use of the textbook and help them enrich its content to maximize learning opportunities for children. This could be done through helping them understand the teaching and learning philosophy underlying the various learning aids or activities suggested in the textbooks. Teachers should also be involved in the analysis of textbook in terms of identifying issues related to its effective use and suggesting strategies for improvement. It is quite obvious that teachers would be able to make effective use of the textbook only if they realized the value of textbook as an important teaching and learning resource.

REFERENCES

- Abbas, M. (1993). *Textbook development in Pakistan and United Kingdom*. Lahore: Sang-e-Meel Publications.
- Bano, Y. (2005). Curriculum and Textbooks: Issues and Challenges in Pakistan. *ANTRIEP Newsletter*, 10 (1), 3-8.
- Chambliss, J.M. & Calfee, C.R. (1998). *Textbooks for learning: Nurturing children's minds*. Oxford: Blackwell Publishers.
- De Guzman, A. (2000). Statement by World Bank in the Southeast Asian Ministers of Education Organization (SEAMEO). Presented at the 35th Council Conference. Retrieved July 18, 2004, from <http://www.seameo.org/vl/library/dlwelcome/publications/appen101.ht>
- Fuller, B., & Clark, P. (1994) Raising school effects while ignoring culture? Local conditions and the influence of classroom tools, rules, and pedagogy. *Review of Educational Research*, 64, 119–157.
- Fuller, B., & Heyneman, S. P. (1989). Third World school quality: Current collapse, future potential. *Educational Researcher*, 18, 12–19.
- Haberman, M. (1992). A powerful influence: The role of classroom teacher as a curriculum leader, *National Association of Secondary School Principals (NASSP) Bulletin*.
- Heyneman, S., Farrell, J., & Sepulveda-Stuardo, M. (1978). *Textbooks and Achievement: What we know* (World Bank Staff Working Paper No. 289). Washington, DC: World Bank.
- Lebrun, J., Lenori, Y., Laforest, M., Larose, F., Roy, G.R., Spallanzani, C. & Pearson, M. (2002). Past and current trends in the analysis of textbooks in a Quebec context. *Curriculum Inquiry*, 32 (1), 51-83.
- Maxwell, J. (1985). The future of textbooks – Can they help individualize education? *A Bulletin Special, National Association of Secondary School Principals*, 68-74.
- Mohammad, F.R. (2004). Practical constraints upon teacher development in Pakistani schools. *Journal of In-service Education*, 30 (1), 101-114.
- Oakes, J. & Saunders, M. (2004). Education's most basic tools: Access to textbooks and instructional materials in California's public schools. *Teachers College Record*, 106 (10), 1967-1988.
- Science Textbook for Class V*. Baluchistan Textbook Board Quetta.

Science Textbook for Class V. Sindh Textbook Board Jamshoro.

Science Textbook for Class VIII. Baluchistan Textbook Board. Quetta.

Science Textbook for Class X. Baluchistan Textbook Board. Quetta.

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