

Student Perceptions of Textbook Layout and Learnability in Private Schools

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Abstract

This research is an exploratory study that investigates students' perceptions pertinent to textbook layout and organization and their evaluation of the textbook ease of learning. The objective is to find out whether the layout dynamics of school textbooks make any difference in students' interest in studying or subject understanding. 73 students from various private schools of Pakistan's cosmopolitan city Karachi responded to a quantitative survey that gauged their perceptions regarding textbook components such as paper, print, color, and textbook pedagogical features. Findings indicate that students rank print and color above paper quality, and that there is no particular relationship between a book layout and the actual use of textbooks.

Keywords: layout, learnability, pedagogical aids, private schools, primary level, textbooks

Introduction

Textbooks are an indispensable part of the world of education as they serve numerous purposes; for teachers, they often become the embodiment of the curriculum, to the extent that many instructors believe in teaching their students the entire content of these books from cover to cover. For learners, these not only constitute the corpus of the subject matter on their grade level, but also provide a structure and reinforcement to their learning by the way they are organized and illustrated (Miller & Berry, 1962); whereas, for the entire system, from government to districts to schools, these books become the curricular and the evaluative point of reference.

The content of textbooks is no doubt essential, but the organizing framework of ideas and concepts to be taught is no less important. The layout of school textbooks does not merely deal with aesthetics, even though it is an important aspect (Neill, 1982). By virtue of including essential features such as glossaries, relevant graphics, teacher's notes just to name a few, a textbook becomes a consolidated educational resource across-the-board, and as such, the same features and others can become essential pedagogical tools for the teachers. Conversely, inappropriate textbook layout and features may have detrimental effects on student learning and interest, and may render this resource ineffective (Harp & Mayer, 1997). The necessity of textbook appeal has given way to an entire field of instructional design. This is a significant development, because studying from texts is predominantly a visual act, and as such, has certain psychological implications. To this end, textbook design has become a science and textbooks are increasingly being prepared on tried and tested principles. However, there is still a gap between the design and usage of textbooks in the developed and developing nations. Chadwick (1990) has cited many reasons why this gap exists. First, the preparation of well-researched and designed textbooks are highly labor-intensive. Secondly, the shortage of seasoned textbook writers, illustrators, and skilled instructional development workers in developing nations increases this workload. Since projects are poorly managed and replication of the experiences of advanced nations is preferred over the contextualization of the process in the local milieu, this leads to going two steps backwards when the developed nations move forward with continual research and development in educational psychology and instructional development, the developing nations are still busy replicating the previous models.

Along with these problems, Pakistan as a developing nation faces other issues in textbook preparation, although it realizes that books are "Necessary tools for regular students and guide for the inexperienced teachers" (Govt. of Pakistan, 2000, p. 23). If the analogy of textbooks being the backbone of classroom instruction is anything to go by, it wouldn't be wrong to say that in the Pakistani school context, the teaching-learning process is particularly skeletal. Textbook

development for public sector schools is the sole responsibility of the government, which is the singular learning resource in terms of availability in such schools. Supplementary resources such as teachers' guides or school libraries are in almost all cases unheard of. Plenty of issues, such as delay in printing, failures in the procurement of paper, and errors in print plague this domain and private schools, although not the end users nonetheless are often affected by a number of these problems by virtue of government exam board affiliation. With Karachi being a major educational hub of Pakistan, the private schools dominate the educational landscape and consider students to be at the center of the teaching and learning exchange (Rezat, 2006). A study of the perceptions of textbook layout and learnability of students studying in private schools at the elementary level is an exercise worth undertaking. This research investigates students' perceptions pertinent to textbook layout and organization and their evaluation of textbook ease of learning.

Literature Review

Any talk of textbook layout and learnability would benefit from three theories that pertain to textbook design: The first, that is the generative theory of textbook design states that the extent to which a reader uses his or her cognitive processes in learning meaningfully is influenced by the features of text design. In this theory, the process of learning is deemed a constructive act, where each piece of knowledge is used to build cognitive connections. Mayer, Steinhoff, Bower and Mars (1995) with the help of a model proposed that students can build verbal and visual connections of a concept if their text and image representations are simultaneously captured by memory, which has a greater probability when the placement of illustrations on a page is proximate with relevant text, or when students are skilled enough to visualize the images of the text they read. In their research, the annotation of illustrations was an important variable. Closely printed text and illustrations that had captions or labels turned out to have a greater chance of being retained by students than texts and illustrations that were without any annotations, even if they were situated very closely on the page. Harp

and Mayer (1997) took the same scientific text used in the former study to investigate the role played by illustrations in the learnability of scientific texts. They hypothesized that certain details, including images and texts are seductive, that is, their function is merely one of arresting the interest of the reader and instead of facilitating the understanding of concepts and subsequent problem-solving, these details distract the learner. In the study, the interest provided by details was categorized into two kinds: emotional and cognitive. Decorative details such as illustrations that are interesting, but pedagogically unnecessary, merely provide emotional interest; whereas, images captioned with summarized explanative text are greatly conducive to understanding and therefore of cognitive interest.

The second theory, that is, reader- oriented theory, advances the generative theory by implying that there is a method to how cognitive connections are made by reading a text. It is based on the principle that a text's meaning is not located in the text per se, rather it is derived by the reader in the process of reading. Factors such as the reader's motivation for reading and the social-historical context in which the text is read affect the meaning the reader grasps (Weinberg & Weisner, 2011). According to this theory, three different readers, that is, the implied, the intended, and the empirical interpret texts differently. In explaining the difference of interpretation for each, the authors use the term code, which is a means of assigning meaning to a text. A code is a kind of prior learning and Weinberg and Weisner (2011) contend that a student must know the code behind the formatting, symbols, and language of a textbook in the case of their study of mathematics. These codes will have materialized from the distinct experiences of the students, who are also implied readers. If the students do not have the implied reader's code, they may not fully benefit from the formatting and may not use the features of the layout as intended by the textbook writer. In this study context, it is important to note the necessity of students to use textbook features well, as they do not possess the codes of an empirical reader, that is, an expert in the field, who reads the textbook in a more critical light and can put the content in the correct context.

A number of theories, namely the theory of verbal learning, reinforcement theory, and the organic theory of reading, fuel a set of principles related to textbook design and illustrations. Smith (1960) espouses the functional or organic theory in drawing a list of scientific principles of textbook design, with particular reference to illustrations. According to this theory, the design and illustration of a book tapers down from a broad cluster of mostly integrated sources, namely the printing equipment and materials, the requisites of the subject matter, and the behavioral and communication process of study that are of verbal and nonverbal nature. To cater to the various needs of a student, like the provision of visual appeal, the enhancement of subject understanding, the improvement of content retention and the stimulation of creative thinking, and in order to effectively organize textbooks, designers must employ these communication processes in creating a spectrum of impressionistic, abstract, and representative art. In this regard, the author's suggestions support the findings of Mayer, Steinhoff, Bower and Mars (1995) and those of Harp and Mayer (1997) on illustrations and reinforcement.

Various studies have been carried out to investigate student perceptions pertaining to textbook layout and learnability (Landrum & Clark, 2006; Landrum, Gurung & Spann 2012; Weiten, Guadagno & Beck, 1996). A large number of these studies relate to college psychology course books. There is a palpable absence of research related to students' opinion on textbook layout either at the primary or secondary school level. Weiten, Guadagno and Beck (1996) believe that textbook features, specifically pedagogical aids, add to textbook length and cost and should therefore only be included if their benefit is adequately realized in terms of student learning. Landrum and Clark (2006) argue that certain textbook features should become obsolete, citing Gurung's (2003) research findings that show a negative correlation between students' perception of the helpfulness of key terms and actual student performance. This corroborates the notion that student perceptions of learner-friendliness may not always mean actual content retention.

In light of the literature on perception of textbook layout

and learnability, textbook evaluation seems to be the domain of the instructor to a considerable extent, more so at the primary and secondary school levels. This essential task is facilitated through extensive checklists and rubrics. Mahmood, Iqbal and Saeed (2009) document the development of a rubric for quality textbooks, based on Garvin's (1987) eight dimensions of quality products. Aesthetic, perceived value, and durability were dimensions most directly related to the layout aspects of textbook evaluation. This is indeed a unique construct in the Pakistani context, and adapting a child-friendly version of this rubric particularly for the measurement of student perceptions of layout is highly recommended.

In Weiten, Guadagno and Beck's (1996) research, a survey was conducted on 134 fellow students seeking evaluation of 13 familiar pedagogical aids namely: chapter outlines and learning objectives, boldface and pronunciation guides for technical terms, running and chapter glossaries, italics for emphasis, exercises for chapter review, learning checks, and demonstrations and discussion questions. Boldface for technical terms, chapter summaries, and running or chapter glossaries received the highest ratings. The least valued in the study were discussion questions, learning objectives, and pronunciation guides. As such, there was no relation between the students' GPA and their ratings of the pedagogical aids. What makes the study important in the context of this paper is the assertion that teachers are skeptical about the significance of pedagogical aids (Weiten, 1998), together with the iteration of the premise that pedagogical aids in textbooks are devised to cater to the needs of students, hence the preference of students' perceptions to those of the teachers. It would be interesting to note the implications of a similar premise of the school-going student level.

Making important contributions to the measurement of student perceptions of textbook efficacy, Landrum, Gurung and Spann (2012) listed three methods of studying the impact of pedagogical features in textbooks: (a) objective analysis, (b) faculty surveys, and (c) research of student involvement. The third method constitutes two categories: studies that measure student inclinations and self-

reported use, and those that link these preferences and self-reported use for course grades. Landrum, Gurung and Spann (2012) referred to the research of Weiten, Guadagno and Beck (1996) as instances of the former. The two studies used the Student Assessment of Textbooks (CSAT) and Textbook Assessment and Usage Scale (TAUS). The authors came to the conclusion that students who bought the textbooks for learning and understanding and due to the nature of its prescription had an increased probability of reading it. Amongst the textbook features, significantly related to student reading were figures, tables, research examples, and pedagogical aids. These theories of textbook design and the studies conducted on textbook features offer helpful insights in measuring perceptions of textbook layout and learnability. Limitations may lie in the contextualization of these measures in the generic Pakistani school textbooks and student perceptions related to it.

Methodology

A survey method was chosen using questionnaire for the study to gauge students' perceptions of the textbooks they use, since it seemed a far more user-friendly and streamlined format. Given that the premise of the study was more generic rather than hypothetical, data analysis was done using the simple descriptive method.

Participants

The selection of the sample population was carried out on the basis of the availability of students at the elementary level, which included classes 1 to 8. A sample of 100 students studying in 22 private schools was selected for this study, out of which 73 forms were received duly completed. Non probability sampling with a convenient sampling method was chosen for the study. The mean age of the participants was $M = 13$.

Tool

After going through a number of studies that focused primarily upon textbook features, the researcher was able to develop a six item tool, which was reviewed and approved by experienced re-

searchers. This scale consisted of two sections: Section A included a demographic form and sought information regarding age, gender, and area of residence; and Section B consisted a number of items that enquired the importance of factors such as quality of print and paper, the existence of color in textbooks, students' ratings of the features of textbooks they use, namely the book's overall layout consisting of cover, title page, table of contents, index, glossary and appendix, as well as chapter layout constituting chapter objectives, summary, introduction, information boxes, activities, and questions. Other items were related to student perceptions of visual stimulation levels offered by textbooks, learner-friendliness of textbook layout, and frequency of students' textbook use.

Procedure

Informed verbal consent was sought from the participants and they were briefed regarding the items on the scale and any ambiguities that occurred in the items were clarified accordingly. Each student took 10 minutes on an average to complete the survey. All returned forms were coded and passed through a data-cleaning process; numerical and categorical values were assigned to the responses, which were then entered in the SPSS 17.0 program and descriptive tests were applied to the data.

Results

Importance of print, paper and color

Out of the more perceptible elements of their school textbooks, the quality of print turned out to be more important than the paper used for printing the books. The respondents rated the importance of color used in graphics (pictures, charts, diagrams) as the highest, learning aids (for coding, classification and informational categorization purposes) as average, and presentation of information as the least (see Table 1).

Table 1. Perceived importance of the quality of print in textbooks

1	How important do you consider the following features In a text-book?	Not Im- portant	Some- what Impor- tant	Very Im- portant
a	Quality of print: font, type, graphics etc	1	19	51
b	Quality of paper used for print	6	26	39
c	Color: Graphics (pictures, charts, diagrams)	6	12	54
d	Color: Presentation of information	5	27	38
e	Color: As a learning aid (coding, classification and categorization of information)	4	14	54

Rating of book and chapter layout features

A significant number of respondents expressed high satisfaction with the functionality of the cover, title page, table of contents, and index of their textbooks. A fair number of them found their textbook glossaries and appendices sufficiently functional. Respondents rated chapter introductions, activities, boxes (with tips, additional information and web sources), and questions present in their textbooks to be adequately good in terms of functionality. Slightly more than half of the respondents expressed complete satisfaction with their textbooks' chapter objectives and a few could say the same about chapter summaries (see Table 2).

Table 2. General ratings of the book and chapter layouts of the respondents' own textbook

2.	How would you generally rate the following features of your textbooks?	Do not exist	Present but unsatisfactory	Good Functional
<i>A. Book layout</i>				
i.	Title page	3	12	57
ii.	Table of contents	1	17	52
iii.	Indices of the respondents' own textbooks	6	14	52
iv.	Glossary of the respondents' own textbooks	8	13	50
v.	Appendix	8	22	40
<i>B. Chapter layout</i>				
i.	Objectives of the Chapter	38	19	8
ii.	Summary of the Chapter	32	21	10
iii.	Introduction	45	16	7
iv.	Boxes (tips, additional information, Web resources)	44	18	4
v.	Activities	47	12	5
vi.	Questions	47	14	6

Perceptions of Learnability

As shown in Table 3, although nearly 75 percent of the respondents found their textbooks visually stimulating, not much difference was found among those who thought their textbooks were interesting enough to make learning easy and those who thought otherwise. A majority of the students perceived that the layout of their text-

books made revision easy. In terms of textbook use, both for casual or independent and teacher-assigned study, 51 percent of the respondents admitted that they seldom used their textbooks (See Table 4).

Table 3. Student perceptions of learnability

3.	Do you think:	N/A	No	Yes
a.	Your textbooks are visually stimulating?	3	15	53
b.	Your textbooks provide enough interest to make learning easier?	2	30	40
c.	The layout of each chapter in your textbook helps in the revision of lessons?	5	25	42

Table 4. Student responses to frequency of textbook use

4.	How often do you study from your textbooks:	Never	Seldom	Frequently
a.	Independent/ casually?	2	37	31
b.	In accordance to teachers' reading assignments?	3	36	31

Discussion

Reflecting on the results of the survey, the following points can be noted:

1. It seems that students at the elementary level value superior textbook print and colorful pictures more than good quality paper.
2. Students are more satisfied with the overall textbook in relation to its units, that is, chapters.
3. The relationship between perception and usage rate of textbook layout does not seem clear in the culmination of this study, while the general perception of textbook layout of the private school students surveyed is positive, the seldom voluntary or teacher-man-

dated use of textbooks seems to counter this positive perception.

The first finding effectively negates a common assumption regarding the importance of paper quality. It might be of interest to those who engage in the Economics of Education, particularly at the government level. The 2009 Education Policy of Pakistan enunciates this supposed importance by promising the availability of superior, albeit, affordable paper for printing of textbooks. The quality of print; however, is not mentioned in the document (Ministry of Education, 2009). If this finding can be generalized to a larger population, it would not only mean cost-cutting as far as paper is concerned, but also reallocating those expenditures towards the effective designing and printing of textbooks. Hence, if students, especially at the private sector level are considered consumers of textbooks in the commercial sense, this would indicate a greater customer-focus. Another implication of this finding would be in the reorientation of textbook design. With students considering print and visual elements more important than the paper, the change of medium from paper to screen in the form of e-books or electronic resources would become a natural transition. As such, it would perhaps be more ecologically as well as economically viable.

The second finding is significant when placed in the broader context of learning. Augmenting the findings of previous literature (Weiten, Guadagno & Beck, 1996), it can be seen that by expecting better chapter summaries, elementary private school students value this layout feature on arguably the same level as their older college-level counterparts. This indicates increased maturity on the part of elementary students and offers insight into the psychology of learning at both pre-and post-adolescent levels.

The third finding is in consonance with the literature so far, in that it looks beyond the utility of the surface features of textbooks and into the psychological aspects of textbook usage. As explained by Giordano (1982), a highly effective layout of a textbook may still render it unsuitable, if it fundamentally differs from the layout of other texts being used. A feature as essential as a map may become

more of a learning obstacle if map-reading has not been taught. Although spoken in terms of the entire textbook, Geertsen's (1977) assertion about the importance of teacher motivation towards textbook reading holds true just as much at the level of textbook layout.

Although findings one and three may seem disparate at first, together they support the theoretical implications of emotional and cognitive interest. While many students considered colorful pictures important and also found their textbooks visually stimulating, the fact that this did not make a difference in the motivation to study from these books seems to validate Harp and Mayer's (1997) conclusion of their research, if it is acceptable to extend this conclusion to subjects other than science. These findings also provide some broad brush-stroke descriptions of the textbooks in question: (a) The illustrations may be decorative or seductive. This would explain the very insignificant difference between those who found ease in learning and those who did not. Apparently, the graphical elements of these textbooks were high on emotional interest, but moderate on cognitive interest; (b) The positive response with regards to the chapter layout facilitation in learning may be due to the decent instructional skills of teachers and their competent use of the textbooks to teach concepts. This signifies the importance of studying textbook design in the right context.

One important aspect worth discussing is the mediating role of the instructor. While some authors have affixed the responsibility of textbook selection with the teachers who use it (Geertsen, 1977; Miller & Berry, 1962), others have mentioned the necessity of a teacher's encouragement towards studying from textbooks (Geertsen, 1977; Hewitt, 1973). The historically linear didactic design of the textbooks with the text as a medium, teacher as a mediator, and student as mostly passive recipient has often meant that the teacher is forced to not only select textbooks intelligently in terms of content and pedagogy, but also supplement an insufficiently organized textbook with effective instruction and use various techniques to support a textbook that lacks various pedagogical aids and organized layout (Giordano, 1982). Therefore, it is important to view the results of this study in the context of the teaching-learning process and to understand how further

effects of textbook layout can be relative to the dynamics of teaching.

This may probably not be the first study of its type in a Pakistani context, yet the findings have opened new vistas for more research in this domain. Keeping students at the center of textbook creation is a step towards developing more effective textbooks.

Conclusion

To conclude, the surface features of textbooks namely, textbook print, chapter layout, and colorful illustrations are important for students of elementary private schools. There will always be a scope for better than before textbooks, keeping in mind the ease of use, sustainability of book as a resource, and the economy. This study of a selection of Karachi's private school students has found that elementary level students can relinquish the quality of paper in a textbook, given that other requisites of layout are fulfilled, such as chapter components or color.

For educationists, there is a significant implication; there must be a regional plan where more students can become considerably if not entirely independent users of the school textbooks and the dependency on teachers as mediators of lessons can be minimized (particularly that employs unnecessary filling up of the chalkboard with lengthy excerpts taken from school-prescribed textbooks for note-taking). This calls for making more interesting textbooks. Without undermining the importance of superior textbook content, this interest cannot be fully generated, and working on the outward features of the elementary school textbook is required. There are also obvious implications for textbook designers who must transit to the digital platform as advances are made in publishing, instructional design, and educational technology.

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