

# Determining textbook learning enhancement as perceived by students and lecturers

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## **Abstract**

The purpose of this research was to determine to what extent textbook characteristics enhance learning. A project team compiled two questionnaires. Twenty-nine questions had two scales to determine the importance and satisfaction with text book characteristics. These questions are the focus of this paper. A number of attributes tested by quadrant analysis and the Wilcoxon signed-ranked test showed that perception and expectation differs significantly for a number of characteristics. The results indicate that academics who embark on writing a text book should take note of the text book characteristics that students and academics feel enhance learning and those characteristics that do not.

*Keywords:* Quadrant analysis; text book characteristics; students; lecturers; learning enhancement

## **1. Introduction**

Research literature on the use and curriculum role of materials (textbooks) in the United States shows that teachers and students depend on textbook materials. Moreover, in South Africa we have the additional debate about the role of the African Renaissance in curriculum development on the African continent (Higgs, Van Niekerk and Van Wyk 2010, 134). According to Kim-Prieto and D'Oriano (2011, 458), creating a new course from scratch can be time-consuming. Moreover, given the complexity of the modern world and the workload of lecturers, the task of developing resources to fit a curriculum can be daunting.

## **Problem Statement**

In many instances, it appears that only senior academics are involved in curriculum development. According to Lianli (2007, 107), lecturers involved in teaching English language classes at university are quite happy to hand over the responsibility for programme content and design to the textbook.

Another area of concern is that it appears that textbooks are not always selected according to the theoretical basis that supports the framework of the textbook.

## 2. Research Questions

The following research questions were formulated:

Which textbook characteristics are perceived by academics as important to enhance student learning? Which textbook characteristics are perceived by students as important to enhance student learning?

## 3. Purpose of the Study

Given the above, the purpose of this research was to determine to what extent textbook characteristics enhance learning - as perceived by academics and students.

## 4. Research Method

The research approach was a qualitative study comprising two surveys conducted with students and academics. A project team, consisting of a publishing company, academics and the researcher, compiled the two questionnaires. The aim of the research was to include both academics and students of all South African universities, universities of technology and nursing colleges in the study. The participating publishing company supplied a contact list of all the academics of the various institutions to the researcher. All these were contacted via e-mail and requested to complete the lecturer questionnaire on-line.

In total 203 academics participated in the survey. This is a 16% response rate in terms of the electronic database supplied by the publishing company. Five hundred and one students participated in the student survey. Overall students from 12 institutions participated in the survey.

### 5.1 *Compiling the questionnaires*

The questionnaires contained the background to the study, instructions for completing the surveys and the assurance that the questionnaires would be handled in the strictest confidence and that no results of the student or academics would be given to the participating institutions. No indication was given of the name of the publishing company.

Both questionnaires consisted of biographical questions, yes/no questions and scale-based questions using the four-point scale. Twenty-nine questions had two scales to determine the importance and agreement with textbook characteristics. Both scales used a 4-point scale. Scale 1 measuring agreement referred to strongly disagree, disagree, agree and strongly agree. Scale 2 measuring importance referred to insignificant, unimportant, important and very important.

This paper focuses only on the analysis and interpretation of the two scale items, using quadrant analysis and inferential statistics to determine agreement (satisfaction) of students and lecturers, the importance of textbook characteristics and if they enhance learning.

### 5.2 *Quadrant analysis*

Importance-performance analysis was first proposed by Martilla and James (1977) to provide management with insights to identify the strengths and weaknesses of a company. A number of studies have subsequently been conducted in various fields applying the technique - quadrant analysis - in fields such as marketing, quality of service, employee satisfaction surveys, measuring student satisfaction - and by consultants (Angell, Heffernan and Megicks 2008, Borg and Mastrangelo 2008; Douglas, Douglas and Barnes 2006; Douglas, McClelland, Davies, and Sudbury 2009, Ennew, Reed, and Binks 1993, <http://www.macorr.com/quadrant-analysis-survey.htm>).

For every characteristic aspect the percentage scores of those respondents who either agreed or strongly agreed were identified, as were the percentages of respondents who considered that aspect important or very important.

Once all questions had been similarly analysed, the median score was determined for both the agreement and satisfaction scores. Then for each percentage score its distance from the median was calculated. The importance scores were the Y-axis scores and the agreement scores the X-axis scores measuring student and academics satisfaction (Figure 1). Subsequently the Wilcoxon signed-rank test, for non-parametric data, was carried out to determine whether there were significant differences between satisfaction and importance ratings.

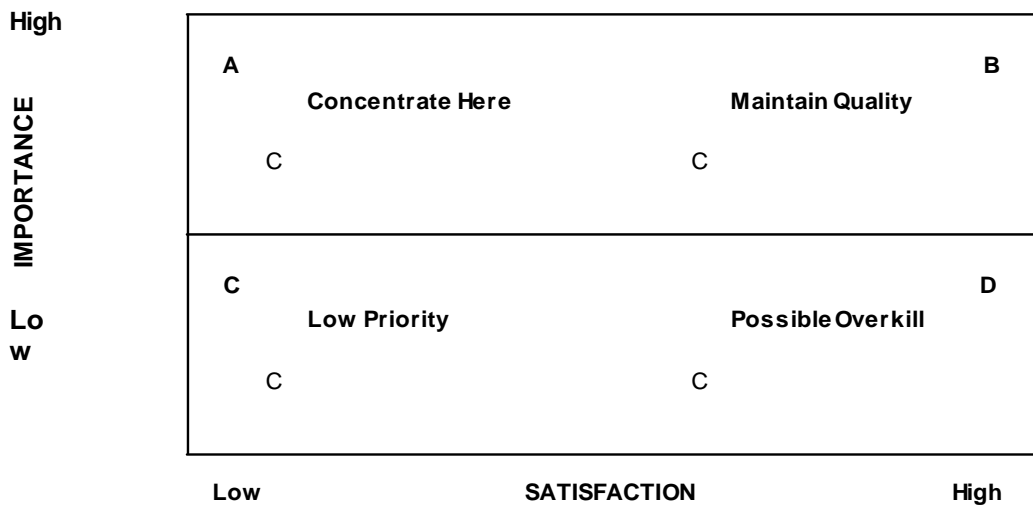


Figure 1: Quadrant analysis

## 5. Findings

The results indicate that most characteristics clustered in quadrants B and C, indicating that students and lecturers experienced a number of characteristics as important and also satisfaction with these characteristics. The combined results of all participants, lectures and students, of all institutions are shown in Table 1. The student characteristics were used as the template as a few characteristics were not relevant for both groups. The results show that both students and lecturers experienced eleven characteristics of textbooks as being important and that they were also satisfied with these. They also perceived most of these characteristics as significantly more important than the current situation (Table 1 - quadrant B).

In addition, students experienced the following characteristics of high importance and high satisfaction:

- when they can relate to the examples used (significantly more important) when difficult words are explained
- when the textbook includes self-evaluation questions or exercises, and provides model answers for these

Lecturers on the other hand perceived two other characteristics of high importance and high satisfaction, but not significantly so:

- one concept at a time is introduced so students do not feel overwhelmed by the volume of information the text is interesting, students enjoy reading it

The above indicates that although the perceptions of lecturers and students mostly correspond, there are also important differences.

The results, however, also indicate a number of characteristics that are perceived as of low importance and low satisfaction (quadrant C). Interestingly, the students experienced 14 characteristics as of low importance and low satisfaction with only 11 for lecturers. Comparing the results of quadrant C for lecturers and students, it is interesting to again note a number of similarities. Nine characteristics were perceived as of low importance and low satisfaction by both groups. The four characteristics in the students' list which are not included in quadrant C for lecturers are listed in quadrants A and B of lecturers. This indicates either high importance or low satisfaction or low importance and high satisfaction for lecturers. This again underlines the fact that differences exist between the views of the two groups. The Wilcoxon signed-rank test gives an indication of which characteristics were perceived as significantly more positive.

**Table 1: Importance – Satisfaction Grid for Students and Lecturers**

<b>Quadrant C: Low Importance and Low Satisfaction</b>	<b>S</b>	<b>L</b>	<b>Quadrant B: High Importance and High Satisfaction</b>	<b>S</b>	<b>L</b>
When the layout of the textbook is attractive.	*		When I can relate to the examples being used.	*	
When the textbook makes use of icons throughout – these are a useful “road map”.	*	*	When the language is easy to understand.		*
When the information is presented in “bite-sized” chunks.		*	When it is easy to understand the content.		*

When the content is written in a conversational style.	*	*	When it is easy to find information in the textbook	*
When the textbook includes tables and flowcharts.			When difficult words are explained in the glossary.	
When the illustrations or graphics are of high quality.			When the textbook has clear headings and subheadings.	*
When the illustrations are up to date (eg not dated in terms of dress or hairstyles, unless a certain period is portrayed).	*		When the content is relevant to the course.	*
When various ethnic groups are represented as part of the examples, case studies and illustrations in the book.	*		When the activities promote analytical and critical thinking.	*
When the activities are interactive.	*	*	When using the textbook helps me to perform better in tests and exams.	*
When the activities require me to collaborate with other students.	*		When the main ideas are summarised in the beginning of a chapter.	*
When one concept at a time is introduced – I don't feel overwhelmed by the volume of information.			When practical, real-life examples are used.	*
When the cover of the book is appealing.	*	*	When the textbook includes case studies.	
If I like the visual images.	*	*	When a summary is included at the end of the chapter.	*
If the text is interesting, I enjoy reading it.			When the textbook includes self-evaluation questions or exercises, and provides model answers for these.	
			When sufficient examples are included to explain theoretical concepts.	*
<b>Quadrant A: High Importance and Low Satisfaction</b>			<b>Quadrant D: Low Importance and High Satisfaction</b>	
The textbook includes case studies.		*	Difficult words are explained in the glossary.	*
The textbook includes self-evaluation questions or exercises, and provides model answers for them.		*	The textbook includes tables and flow charts.	
			The illustrations are up to date (eg not dated in terms of dress or hairstyles unless a certain period is portrayed).	

Notes: 1. The tick indicates which group the item refers to.

2. \* Indicates a significant difference between the current satisfaction and the importance.

The results of interest and value to textbook writers and publishers are the results in quadrants D and A, of which lecturers indicated a number of characteristics that are currently an overkill.

The focus of this study was to determine to what extent textbook characteristics enhance learning as perceived by academics and students. The main characteristics of textbooks, which both academics and students perceived as important in making studying easier, are those listed in quadrant B. It is important to note that academics and students are not very concerned about aspects such as an appealing cover, whether the layout of the textbook is attractive, if the textbook makes use of icons throughout, as long as information is presented in "bite-sized" chunks, the illustrations are of high quality, whether the textbook is written in a conversational style, whether the activities are interactive, and whether various other ethnic groups are represented in examples, case studies and illustrations in the textbooks. In summary, it seems as though students and lecturers are not very concerned about the visual presentation of the textbook.

Given the results of this research, a number of recommendations can be made. It would enhance student throughput if universities give more support to lecturers who intend to write a textbook by providing specific policies on textbook development, financial support similar to that for accredited articles, and professional guidance on the layout of textbooks to support the curriculum.

Another relevant point is that academics and publishers who embark on writing a textbook should take note of the textbook characteristics students and academics feel enhance learning and those characteristics which do not, i.e. those characteristics with low importance and low satisfaction and those with low importance and high satisfaction. The focus of this paper was on the analysis and interpretation of the two scale items, using quadrant analysis and Wilcoxon signed-ranked test to determine agreement (satisfaction) of students and lectures and the importance of textbook characteristics and if they enhance learning. It is clear from the results that both lecturers and students agree that the textbook enhances learning. However, there are a number of aspects that should be taken into consideration when writing textbooks.

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