Chapter 1

Introduction

Background to the problem

At a departmental meeting …

Vista University is known in South Africa as a historically disadvantaged or black university. It is a multi-campus university (it has eight campuses throughout South Africa) and caters for learners from historically disadvantaged backgrounds. The Department of Mathematics and Statistics holds an annual meeting to coordinate the activities in the department across all eight campuses. Attendance is compulsory for all lecturers from all the campuses. Every year the same problem arises, which is to have examination papers drawn up that will be of a uniform standard across all the campuses. It is a very frustrating task for the compiler of the papers to get contributions from the lecturers that are submitted on time, in the agreed format and of an acceptable standard. During the 2000 meeting it was unanimously agreed that the long-term solution to the problem would be a **database of questions** in the agreed format and of an acceptable standard. Because the lecturers are spread over South Africa, this database must be available through Vista's Intranet.

The development of such a product would involve a great deal of time and energy, and the most important question to ask is whether the lecturers would use the product. The solution is to **design a prototype** of the product: a database with a Web-based portal populated with a sample of questions. The **usability of such a database must be determined** to ensure the effectiveness of the final product.

As one may expect, databases populated with questions already exist on the Internet. For example, DASL(The Data and Story Library) provides "data from a wide variety of topics so that teachers can find real-life examples that will be interesting to their students

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Background to the problem (continued)

A scenario: a lecture in Statistics

The following scenario is one of many cases that illustrates that it is difficult, if not impossible, for most of the first-year Vista students to understand or relate to "stories" that are not part of their indigenous knowledge or experience:

The lecturer in Statistics at the Mamelodi campus of Vista University always stresses the fact that understanding the processes of statistics alone is of little practical value. In order to apply statistics and draw meaningful conclusions, a thorough understanding of the problem in which the technique is to be used is essential. In other words, the students must understand the "story" or setting of the problem before they can solve it. To illustrate a concept in regression analysis, the lecturer decides to use the classical text-book example: "…there is a very strong correlation between the number of storks nesting on the chimneys in London and the number of births in London". In keeping with her lecturing style, the lecturer first asks the class what they associate the word "stork" with. After quite a while spent pondering the question, one of the hundred-and-fifty students answers triumphantly, "Stork Margarine!"

The question arises whether the language of instruction (English), and the fact that the prescribed textbooks are written by mostly American authors, are obstacles to the thorough understanding of a question. If this is found to be the case, it will have to be taken into account when populating a database of questions that will be used to compile test/examination papers for the Vista student. It will also be a strong argument for preferably not using existing online sources of examination questions.

Background to the problem (continued)

A survey

A survey was done to investigate whether the language of instruction (English), and the fact that the prescribed textbooks are written by mostly American authors, could be obstacles to the thorough understanding of a question. The objective was to establish the need for a database of questions "in the South African" context for the first-year Vista student.

When compiling the test paper one of the exercises from the prescribed book was taken: "The following table gives the survival time of 50 guinea pigs in a medical study done in a laboratory. Draw a histogram..." and altered to read: "In the context of the paragraph, explain what you understand by the term "guinea pigs" and draw a histogram…"

Only three students (2,5%) gave the correct meaning of the word "guinea pig" and the rest of the answers varied from "wild pigs" to "pigs from the state of Guinea". Most of the students constructed the histogram correctly and could apply their knowledge of statistics without a thorough understanding of the problem.

Further results of the survey

The results of the survey are summarised in , and indicate that the culture/background/understanding/experience of first-year Vista students makes it very difficult for them to identify with the "real-life" examples used in the existing online databases.

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The aim of this project

The need for a database of suitable questions was already determined and noted during a meeting of the Department of Mathematics and Statistics at Vista University.

The aim of this study is, after a prototype of a Web-based **S**tatistical Data and **S**tory Library in the **S**outh African Context (in future referred to as **SSS)** has been implemented, to **determine the usability** of the product**.**

Research methodology

In order to reach this goal the following methodology is envisaged:
- Research the necessity of such an application
- Research sound principles regarding
  - database design,
  - web page design and
  - web page-database interface design

  that will result in a usable product
- Develop and implement a prototype of the SSS
- Evaluate/testing the usability of the SSS. The methods used are contextual inquiry and "talking aloud protocol"

The research problem for this project

To ensure the effective use of this database by Vista lecturers, the following research problem can be identified: What are the usability criteria for a database-driven Web site? This can be broken down in the following sub-sections: sound principles regarding
  - database design,
  - web page design and
  - web page-database interface design, as well as criteria for evaluating the usability of the product.