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USING USER DESIGN FOCUS GROUPS FOR ADDING QUALITY IN ESIYKHULUMAYO (THE LANGUAGE THAT WE SPEAK)

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Abstract

This paper describes the design process of a support tool (named Esiykhulumayo) for Non-English speaking students. It is a web-enabled language explanatory lookup tool, selected by students when working through learning material when they encounter difficult or unknown words. Design specifications for the tool are developed by user design focus groups, acting as knowledge-building communities. The action cycles in the development process will be described and a presentation will illustrated the tool features.

Keywords
Language support tool, User design focus groups, Kano Model Analysis,

1. Background

> *Wachterhauser(1986) observes. "Our very ability to understand at all comes from our participation in the contexts that make reality meaningful in the first place."*

The language of instruction at most Higher Education Institutions in South Africa is English, but for most lecturers and learners English is a second language (11 official languages; percentage of the population: Afrikaans, 15.1%, English, 9.1%, Tswana 7.2%, Xhosa 17.5% and Zulu 22.3%; literacy rate: 50% Africans, 62% 'Coloureds', 69% Asians, 99% Whites. SIL International: 2003). Complicating this matter, many of the subject specific terminology used do not have an equivalent concept translation in South Africa's indigenous languages. A further complication is that many concepts have different meanings and interpretations, depending on the context in which the words are used (subject specific terminology). Poor communication, misunderstanding and low level interactions between students, lecturers and the learning environment may impact negatively on the students' performance. At the Department of Telematic Education at Technikon Pretoria we have made it a priority to try and find a technological contribution to narrow the language divide. The result of our efforts was the creation of ESIykhulumayo, **an ESI-tool to solve a difficult problem!** This paper will explore the design process of ESI.

2. Identification of a suitable theoretical framework for the ESI-tool

The ESI-tool is embedded in the intellectual climate of an interpretive paradigm, taking distinct positions on ontological, epistemological and methodological issues namely social construction, interaction, interpretation and authentic collaboration (Myers: 1997; Gough: 2002), the latter guiding and informing

practice. The instructional design model used for the tool design is a hybrid of the ADDIE Model and the Kano Model Analysis combined in a participatory action research approach. The five steps in the ADDIE-model (analysis, design, development, implementation and evaluation) are complemented by the six steps in the Kano Model Analysis (Determination of requirements, Development of Kano Questionnaire, Development of Self-Stated Importance Questionnaire, Administration of questionnaires, Analysis of content and Graphical analysis). These steps were combined in cyclic procedures, currently consisting of 4 cycles. Each growing design spiral allows for planning, action, implementation and reflection from the participatory team (user design focus groups). The latter consists of a computer programmer, the developers, instructional designers, lecturers and student users.

Because support tools are designed to support a specific need or to solve a specific problem, they are structured around the needs assessment analysis of the target population. Therefore a situation analysis and needs assessment of Technikon Pretoria's current situation were conducted.

3. Needs assessment analysis

The needs assessment analysis included a variety of procedures from amongst others goal -, performance -, target population -, and task analysis, to determine the student support need as well as the instructional need: An informal needs analysis revealed the following:

3.1   General description of the problem area
Studies done in the life skills programme at the Bureau for Academic Support showed that presently students prefer reading as learning method. Students' reading speed is very slow, which implicates that they need more time to internalise study material. A third hindering factor is the lack of students' comprehension and language ability because of the English teaching and learning environment. This pressurises students and Technikon Pretoria support services to act remedially. The fully booked English language ability programme proves this.

3.2   Goal
The development of the ESI-tool to create and support an active language learning environment for students, based on the pedagogical principle: "People learn better in their mother tongue" (UNESCO:2003).

3.3   A description of the target population
The target population includes all students from Technikon Pretoria. A pilot group of students from the Department of Radiology, were willing to participate in this project.

3.4   A specific description of the performance problem
Non-English speaking students have to cope with unfamiliar study material, as well as an unfamiliar instructional language. Improved language ability, combined with the acquisition of effective study methods, may lead to improved concentration, shortened study time, and effective learning. If the latter can be supported through active learning, by means of the use of combined senses as well as mother tongue language support, the process can be accelerated.

3.5   A detailed description of the tasks
With this problem in mind we asked ourselves a number of questions:
Could the existing tool in WebCT be modified to meet the students' needs?
How can we create:
- A multimedia electronic glossary in WebCT (LMS) to keep students focussed on the reading material?
- An illustrative concise dictionary or glossary without creating a large number of hyperlinks?
- A global and subject-specific database without duplicating it endlessly for every separate subject? (The functionality of WebCT determines that it would be difficult to utilise a global glossary effectively).

With these considerations in mind we decided to supplement the existing glossary tool in WebCT by developing a tool that has the following unique characteristics:
- While reading, the reader can 'click' on an unfamiliar word. A pop-up window displays a text explanation of the concept immediately. This is sustained by graphics, sound and video when necessary.
- An options list provides for students' choice of language.
- The tool is universal, it can be used in any document, and is simple and easy to use.

- The tool is a dynamic web-based database that can handle any word in the document
- A temporary database is automised to make undefined but frequently selected words available to lecturers for updating. Thus the **student act as user designer to populate the database**.
- Subject- and language experts will work collaboratively to clarify and describe selected concepts.

4. Design and development process

Design specifications for the prototype tool were guided by the situation analysis as well as the needs analysis document, the fixed features of the LMS (WebCT) and the requirements of the developers.. The user design focus groups consisted of: Group1 (programmer and the developers), Group2 (Group1 and instructional designers from the Department of Telematic Education), Group 3 (Groups 1 and 2, student users from pilot group). Subsequently the tool-design process is discussed. To establish the link between product prototype features and user satisfaction and perceptions, user requirements and feedback from all the focus groups are important. Using user-design focus groups is a relatively inexpensive and quick method for collecting requirements and task information (Fuccella & Pizzolato 1998:5).

4.1   Action research design cycle 1
The first step was to create a prototype of **ESI**. Characteristics of the prototype were:
- A web-enabled dynamic database with administrator and client interfaces;
- Temporary and permanent databases: an undefined word selected by the user will be added automatically to the temporary database. The temporary database displays word frequency and allows for clarification, and the addition of text descriptions and multimedia objects, before adding the word to the permanent database;
- A basic English dictionary with translations into 3 languages: Afrikaans, Zulu and Tswana;
- Concept descriptions and clarifications in text, graphic, video and audio format;
- Administrative options:
  - ✓   Add and delete words and multimedia objects to database and temporary database,
  - ✓   Add, delete, create and change user logins;
- Lecturer options
  - ✓   Add and delete words and multimedia objects to database and temporary database,
  - ✓   Change his/her password.
- Student (End-User) options
  - ✓   Search for a word, view/listen to a multimedia object
  - ✓   Search word from a PDF document by copy and pasting it to the search box.
During the reflective phase of the first cycle, the prototype was formatively evaluated and refined by Group 1. This was also the planning phase for the second cycle.

4.2   Action research design cycle 2
The first step of the Kano Model Analysis (Walden: 1993) namely, the determination of user requirements, was implemented during the second participatory cycle. A content analysis of the user design requirements identified the concepts for classification that must be included in the Kano Model Analysis Questionnaire. These concepts are then incorporated in the questionnaire in the form of functional and dysfunctional question pairs for each potential user requirement, for which user feedback is desired. The first question (functional question) refers to a situation in which the requirement is met. For example, "If Esiykhulumayo provides visible instructions on how to use the tool, how would you feel? The second question (dysfunctional question) refers to the case where the requirement is not met, for example: If Esiykhulumayo does not provide visible instructions on how to use the tool, how would you feel? For each attribute users are requested to rate their satisfaction, whether this product has this attribute or not. The user can respond in 5 different ways, namely: I like it that way; It must be that way; I am neutral; I can live with it that way; I dislike it that way.
After a reflection session from the group and analysis of the results, modifications to the ESI-tool reflected features like: *Add contextualised dictionary, Visible instructions, and word frequency in temporary database.*

4.3   Action research design cycle 3

The Kano Questionnaire was designed in an online Survey application (Perception 3.4) and administered to Groups 2 and 3 during the action phase of the third cycle. The outcomes of the third phase included: ESI version2, the results from the Kano Questionnaire and formative evaluation in the form of feedback and comments from the user design focus group 3. These recommendations were applied in the fourth design cycle.

4.4   Action research design cycle 4

The next step in the Kano Model Analysis - the design of the Self-Stated Importance Questionnaire accompanied the beta-testing of ESI-version 3. Self-Stated Importance Questionnaires can be used together with the Kano Questionnaire to enhance understanding of the relative importance of each requirement for the user. We anticipate that the last steps in the design process, namely summative evaluation and graphical analysis, will be completed in the fifth action research cycle.

5. Refined ESI-Tool

The ESI-tool currently consists of a web-enabled multimedia database, with a student-user - and administrator interface. The Student interface displays as an add-on toolbar in a course content file uploaded in WebCT. The student selects a language of choice (Afrikaans, Tswana and Zulu) and clicks on an unfamiliar word in the content. These words are matched with a multimedia database, and display at run-time an explanation of the selected word(s), together with a media clip where appropriate, in the learner's language of choice. The unique features of the electronic environment handle these queries instantly and immediate concept clarification becomes an integral part of the whole process of reading and studying. Queries not in the database will be stored in a temporary database to be evaluated, updated and re-routed as new additions to the database. A separate interface for administrators allows for registration and maintenance features. The ESI-tool is currently applied in the WebCT environment, but should be useful in other electronic learning environments as well.

6. Conclusion

Based on an extensive literature study, we decided to use the ADDIE and Kano Model Analysis for understanding user-defined quality (Sauerwein, Bailom, Matzler & Hinterhuber: 1996). These methods offer insight into the product attributes that are perceived to be important to users, and highlight the importance of user input as a powerful development tool. Preliminary findings indicate that students perceive the ESI-tool as user friendly, usable, useful and an exciting tool that students **will** us. We hope that this **ESI solution will solve a difficult problem!**

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