

The design of a Web-Based Information Technology Student Support System for Higher Education

Paraskevi Mentzelou

Technological Educational Institution (T.E.I.) of Thessaloniki

Application Lab. Professor Computer Science

hellenic@hellasnet.gr

Abstract

Information Technology course, is part of the curriculum in most of the departments in Technological Educational Institution of Thessaloniki. Unfortunately, most of the students have not gained during their high school studies the basic computer skills. Consequently students due to the lack of the required background information technology knowledge are facing a lot of learning difficulties during the course. This study describes the design of a Web-based Information Technology Support System for 1st and 2nd semester students for the department of Food Science in Technological Educational Institution (T.E.I.) of Thessaloniki, Greece. The learning model that has been used is a combination of objectivist and constructivist methods.

1. Introduction

Learning in TEI is taking place clearly through objectivist methods where lecturers are presenting the dedicated information and the students have to repeat them back to the lecturer. Information Technology is a 90 hours course and lasts two semesters. It takes place three hours once in a week in the computer laboratory and there is only one lecturer for each class (approximately 24 students in each class) and one textbook. Since 2000 there was a shifting from programming and basic computer knowledge to applications to their specialization because programming and basic computer knowledge became part of high school syllabus.

Undergraduate students are coming with different information technology background knowledge because they are from different high schools and a conducted survey showed that 90% of the students have not gained the basic computer skills during high school. Consequently during teaching lecturers have to bridge the gap between the introduction of computer applications to their specialization and the lack of the

required information technology knowledge. Furthermore, it has been noticed from the records of attendances, that the number of students' drop out and failure has been increased. After discussions with students and lecturers it has been noticed that the main problem was the inefficient students prerequisite knowledge, the lack of supported materials and the limited time during lecturing for supporting students during lecturing. Accordingly, it was decided to redesign the course according to learner-center design, based on problem-based learning approach firstly (in order to study their attitude and also to identify their needs) and secondly, according to the results to design a Web-Based Information Technology Student Support System. The application of part of the Web-based Information technology system has shown a positive affect on students learning approach

2. Teaching and learning process

The process on problem solving approach had followed the following steps. The curriculum has been divided in 28 three hours lectures for 1st and 2nd semesters and is based on problem-based learning [1,2]. Lecturing is taking place according to Figure 1.

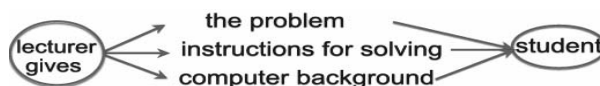


Figure 1. The lecture process.

The food science problems serve as the stimulus for acquiring the basic information technology knowledge needed to their specialization. Many food science cases are encountered in real and simulated food science settings, providing valuable, early technical economic and science experience. Students work either by themselves or in groups of two, it depends on what they want. At the end of each semester for the first two years there were assessments and discussions between students and lecturers focused

on student attitudes, the acquired of basic information technology knowledge, their problem solving ability, and study habits. Students supported that problem based curricula provides a friendlier and more inviting educational climate. The overall process had better results on assessments and fewer students had been dropped out or failed. On discussions with students about the new approach they mentioned that this way is more helpful and understandable to them but they need more explanations during lecturing about information technology and sometimes there were not enough time for the lecturer to reply or to assist all of them. From the lecturers point of view they were satisfied it was mentioned the time limitation and consequently, in order to cover the entire dedicated syllabus there were cases where they were not able to provide the appropriate assistance to the students. Also, there were cases where some students filled bored because they were listening to known information technology materials or they had completed the required task earlier and they had to wait for the others in order to continue with the next task.

2. The Web-Based Information Technology Student Support System

This year during autumn entrance decided to implement on the web [3,4,5] the entire curriculum in the form of 28 independent blocks where links for the required information technology background will be in two forms: general (in the form of definitions) and analytical. Prior to apply the whole process it was decided to study part of it in order to evaluate its operation and for this study it was used only the “Basic Concepts of Information Technology” module. Students divided in two groups, group-a and group-b. Group-a was using the web-based material and group-b the normal ones. The lecture process is in Figure 2. The content of this block was about computer hardware and software and on the completion of this block the students had to be able to make a sensible choice of the most suitable computer for them, to reason their choice and to estimate the cost.

By comparing the results of these groups the overall performance of group-a was better than group-b. Furthermore, all questions from group-a relative to block’s content and missing background information recorded in order to revise and to update the content of the block.

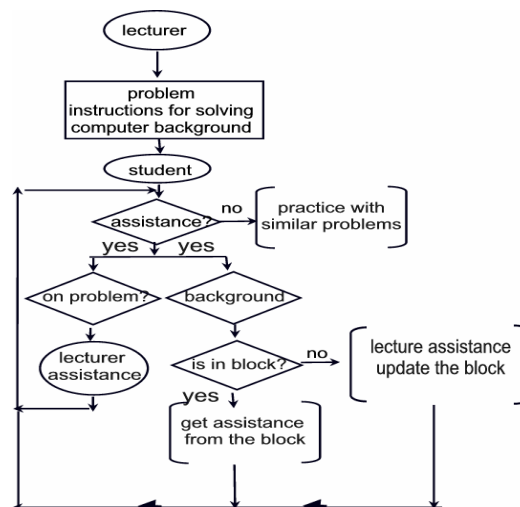


Figure 2. Lecture process

3. Conclusion

The indications from the use of the first block were positive as the students during this process were trying control their learning process, and had moved from passive recipient of knowledge to active participants in the process of learning. Next step is to add the next three blocks, to study the results and if they are positive too then we are going to add the rest of the blocks during next year.

4. References

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