

DEVELOPMENT OF AN INTEGRATED COMPUTER ENVIRONMENT FOR THE MANAGEMENT OF STUDENT CENTERED LEARNING

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Introduction

Computers have provided a versatile and powerful means for enhancing and improving the process of student learning (Mohd-Saman and Mamat, 1997). A computer environment that facilitates the process of student-centred learning is one main current research topic. This project aims to establish and evaluate a powerful integrated infrastructure to facilitate the process of student-centred learning for Higher Learning Education (HLE). This environment comprises of a collection of high performance computer facilities (such as computer communication facilities, high-performance workstations, large database servers and personal computer-based interfaces for students and lecturer) and the related data information system (such as a metadata system, image metastructure storage and retrieval as well as user interface).

Materials and Methods

For a successful design and implementation of this project, it is divided into three technical aspects (Mohd-Saman and Mamat, 1997). First, the Metadata System that provides the base for information about teaching and learning. This includes the provision of materials in the form of electronic documents, paper documents, high quality images, video sequences, interactive video and computer-based simulations. Second is the Technological Basis. This project will provide interactive, easy-to-use access to a range of materials including simulations, statistical packages, bibliographical databases, image-based materials and video. A key issue for ease of use is to provide unifying and consistent user interface. Finally, in the Evaluation of System, two ways, internal and external, will be performed. The internal evaluation covers the user interface prototype designs, attitudinal measures, measures of student-directed learning and measures of students activity through recording use. The external evaluation will be undertaken by the collaborating institutions. This covers the standards to be applied to materials across the curriculum.

Results and Discussion

The integrated computer environment provides the infrastructure that will facilitate the process of student-centred learning (Atan et al. 1998; Maya and Mohd-Saman, 1997). This environment will become the platform for teaching staff to prepare teaching materials (text and image based) as well

as students to access the material though networks of computers. In the initial stage, the system usage will be centred on a small number of departments acting as initial implementers with the help of the project team. The participating staff will introduce to other staff in the same/around department about the system. Course materials will be developed with the help of the project staff. Finally, the initial departments will become mentors for other departments to implement the system successfully and widely across campuses and inter-Higher Learning Institutions. The outputs are sustainable after the participating departments/campuses have managed to develop the expertise to use it. Direct beneficiaries of the project will be students in Higher Learning Institutions are (a) An integrated Student-learning Management system that provides students with on-line information about their course materials and (b) Teaching staff are given access to provide on-line course materials that include text and image-based, thus giving advanced facilities for managing course materials. This project will contribute to the development of expertise for staff and students who are directly involved in it. A few postgraduate students are expected to graduate from this project. The new and improved facilities and network that comprise the infrastructure will provide a major technological advancement in the process of student learning and management. The project provides the linkages in the Higher Learning Institutions, either in local campuses, inter-HLI or internationally for better and efficient learning infrastructure. This ability is readily supported by the presence of superhighway provided by the computer network facilities. Some contributions of the project include setting up of system infrastructure, network and environment, development of software that include the user interface, metadata, communication software and text and image-based databases and implementation and testing of system.

Conclusions

This project has succeeded in establishing and evaluating a powerful integrated infrastructure to facilitate the process of student-centred learning for Higher Learning Education. This will enhance teaching and learning process of students. The Universities of Loughborough and Leicester, UK have developed similar successful projects. Further development and enhancement will be carried out to improve the system.

References

- Atan, R., Mohd-Saman, M.Y., Mamat, A, Sulaiman, M.N. 1997. "System to Analyze Web Accesses", Proceedings Intec'97 (Information Technology Colloquium), Jabatan Sains Komputer, Universiti Putra Malaysia, May 1997. p. C21-25
- Maya, S.L., Mohd-Saman, M.Y. 1997. "Animation For Internet-Based Education", Proceedings Intec'97 (Information Technology Colloquium), Jabatan Sains Komputer, Universiti Putra Malaysia, May, 1997, p. D16-20.
- Mohd-Saman, M.Y. and Mamat, A. 1997. "Development of Student Centred Learning Environment" Seminar IRPA Research & Development Faculty of Science and Environmental Studies, Dec. 17, 1997 UPM. p. 56-60.