THE HONG KONG POLYTECHNIC UNIVERSITY

PART I Summary of Proposal

1. Title: Diagnosis and Prognosis of Online Group Learning Effectiveness

2. Abstract of the proposal

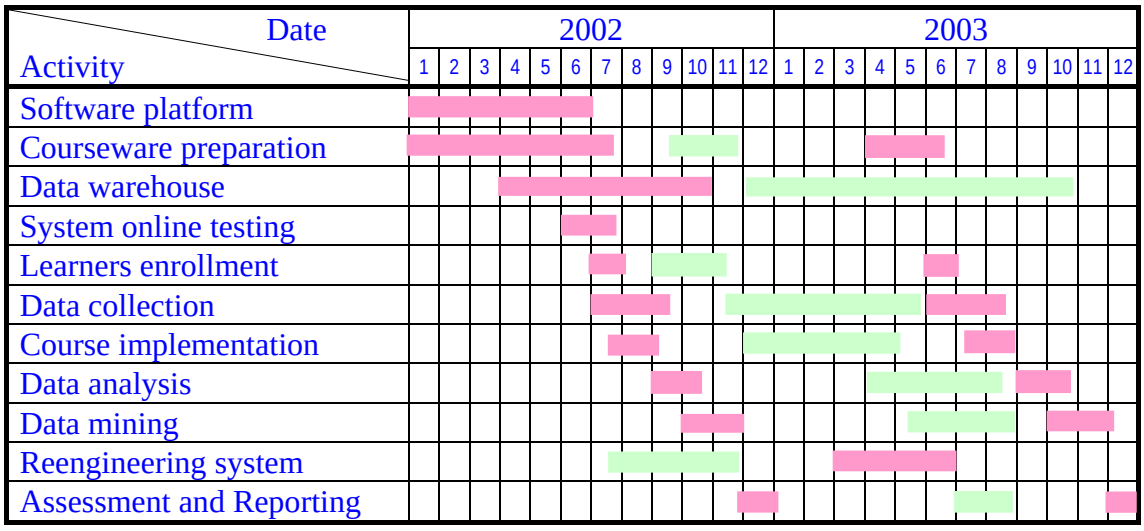
The online teaching and learning environment is a new and largely unexplored area for education. In Hong Kong Education Reform, Government recommends 25% of school curriculum using information technology in HK's schools. Therefore, web-based teaching technology has become a popular tool for many school or universities in coming decade. It can be used for every educational level and distance education in many different fields, especially in "Self learning and Life-long learning" which mentioned by HK Education Commission.

In order to make these opportunities possible, there are many requirements, including sufficient funding, a strong technological infrastructure, hardware and software, good design and interface, operations, maintenance, training, and cooperation of every involved party. When these requirements have been met as a minimum condition, web-based teaching can provide many benefits to students, teachers, educators and universities in HK "paradigm shift" education.

In the future, when educators begin to use electronic communication for education, they experience a whole new set of physical, emotional, and psychological issues along with the educational issues. This project could be provided a wide range of fundamental data for educational research in order to improve the online teaching and learning.

3. Expected duration of this project (in year and month) 2 years

The proposed schedule of the project as followings:



PART II Details of the Project Proposal

Cyber Home School

Here we focus on the issue of how computer technology can be used to facilitate learning in cooperative learning environments. This is an important issue for several reasons. First, pedagogy that requires students to actively participate in the learning process has been found superior to lectures. Second, because many organizations are restructuring around a team concept, employers are expecting their new hires to be skilled at teamwork. And, last, many organizations are using computer systems for communicating, collaborating, and decision making. Taken together, this means that to compete effectively in the job market, students must be trained in how to use computer technology to work cooperatively.

The essence of any learning environment is communication, for it is through the accurate exchange of information, ideas, questions, and criticism, that learning occurs. Communication is particularly important in collaborative learning and teambuilding because learning and successful group development can only happen through on-going dialogue. The web-based interactions of collaborative learning can be synchronous or asynchronous, and also function monitoring of on-going student learning. We now can provide this education to remote geographical areas and link students from vastly different cultural background.

Educational Data warehouse

Some demographic information, academic information, and previous experience with the subject matter will serve not only as a database for the instructional designer to conduct a learner analysis, but also a reminder for learners to be more aware of or alert to their potential barriers. The online learning system provides 24-hours-a-day, seven-days-a-week for tracking learners to collect data. There are many kinds of data could be collected form this project. Such as dialogue, negotiating, navigating, interactive, and communications, etc.

The logical form of any discussion intervention is determined by the critical-thinking strategy the moderator uses to compose it. Critical-thinking strategies come in two forms: those that sharpen the focus of the dialogue, and those that dig deeper into dialogue. The dialogue elements data are collected may include quotes by participants or citations of experts, images, audio or video files, site references, or assignments.

Successful educational hypermedia environments are more than the information presented. Characteristics of hypermedia online learning and cognitive flexibility theory are discussed in relation to navigation strategies. In order to collect interactive data, developing and refining navigation strategies for instructional hypermedia will aid novices and experts in understanding the complexities of complex content while avoiding reductive bias.

Data Mining in *Intelligent Online Group Learning* (IOGL) System

The IOGL System investigating a decision making tool for educators to predict students' learning behaviours in order to help tutors implement their new schedule and collaborative learning in web based environment. The knowledge discovery algorithms of this system help educators to reform curriculum and select reliable indicators for assessment usage in Hong Kong education system.

The IOGL System can follow and monitoring the student learning progress in order to identify the learning problems, and web-based data acquisition techniques for gathering learner information will be used in order to build a data warehouse.

An important issue is, therefore, how is the hidden information to be revealed in learning process. The IOGL System will be valuable to planners and decision makers who need coherent framework for understanding and evaluating students' learning abilities and learning problems in order to improve individual learning or collaborative learning.

In the net-based learning, interactive and synchronous collaboration with a relatively broad communication channel. The real time response for learner is needed in communication-oriented computing learning. The IOGL System develops a net-based curriculum offering new and better ways to present learning information for higher achievers or lower achievers, to educate, and to assess. As above results of this system, it becomes an intelligent system for students' learning.

Technology needs

The technology of system available for conducting classes, meetings, chat, dialogues, forum, intelligent FAQ, quizzes and seminars online generally involves the use of software that is either intranet-based, meaning that students use software to access a closed network on a remote server, or internet-based. We need to reconstruct our infrastructure and software to fulfill "Technology as a Facilitative Tool" in a computer networking environment.

The issue, then, is how to use the software developed to deliver the instructional materials, also known as courseware, or course-authoring software. When it is too complex, it can lead to frustration on the part of the user and frustration with the learning process. Additionally, a complex software package would require that faculty be trained well enough to be able to develop and deliver the course, as well as act as a support person for the participants. Finally, the software can be helped the educators for assessment in formal and informal learning.

System Framework