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Preparing Individuals for Employment in Virtual Organizations

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Introduction

Like many regions, Hong Kong has to increase the supply of IT practitioners for the booming information technology and electronic commerce sectors. According to a consultant's study (PricewaterhouseCoopers, 1999), the shortfall was now between 1,700 and 4,000 and by 2005 would be between 3,700 and 14,000. There may be a shortage of 50,000 IT degree graduates by 2010. This needed to be dealt with. The greatest growth in demand is expected for "consultancy and specialist" practitioners and "IT management" – at 14 per cent and 12 per cent year. In other words, Hong Kong not only needs technical people but also technology capable professionals and managers. Hong Kong has to improve the training and education offered, particularly in terms of the range, relevance, timeliness and flexibility of training.

In 1999, Hong Kong decided to develop Cyber-Port which is a comprehensive facility designed to foster the development of Hong Kong's Information Services sector and to enhance Hong Kong's position as the premier information and telecommunications hub in Asia. It is hoped that the Cyber-Port will assist and meet this challenge by attracting a community of top international and local cyber talents and organizations.

Afterwards, Hong Kong has begun recognizing the potential of the "Virtual Organization", or "Virtual Corporation". In the virtual model, as it is typically defined, a lead organization creates alliances with a set of other groups, both internal and external, that possess the best-in-world competencies to build a specific product or service in a very short period of time (Grenier and Metes, 1995). Hence, Hong Kong should train more virtual workers in order to adapt to the new working environment and culture.

To help in the development of virtual working environment in Hong Kong, a course named "Virtual Work" was established at a university in May 1999. This paper describes the contents, principles, benefits and shortfalls of the course, and draws conclusions for a more general direction of the course.

Overview

The course aims to prepare students for future careers in organizations where a significant part of the operations

are carried out "virtually" without the physical presence of all. The course has been run for two times. The first one was completed in May 1999 and the second one was completed in Jan 2000. There were thirty-two students in the class each time (limited of classroom size). Students had to take fourteen weeks of classes. The assessments are coursework (65%) and examinations (35%) respectively. After completing the course, students were asked their comments of the course. Data were collected from students through a variety of methods including voting, open-end discussion and individual interviews in the classroom and on the Internet.

Course Principles

The course design and implementation followed several principles quickly outlined below.

Principle #1: Experiential learning. A key objective was that students would experience virtual work, rather than study it text-book style. First, there are few text books on virtual work, although a number of applicable texts are available (e.g., Greiner and Metes, 1995, Igbaria and Tan, 1998, Norton and Smith, 1997). Second, the course was supposed to create capability and a tacit understanding among students, not simply a text-book level understanding.

Principle #2: Technology – Process – Management – Culture. The course covered virtual work from four perspectives. Technology covered the topic in its application to different modes of work, i.e., technology for same-time-different-place work. Process stressed the changes in work procedure (re-engineering) that can be brought about by virtual work, but also the changes needed in cooperation and communication to succeed with virtual work. Management was discussed from the operational level (team management) to strategic level (strategic drivers). Culture was the most experiential topic. Students were to learn how it "felt" to work in a virtual environment, together with experiencing failure and success.

Principle #3: Apply virtuality principles also to course design ("practice what you preach"). A credible course on virtual work needs to implement principles of this work approach also in the course design itself, especially if it is to be experiential. As a result, course management was, at least to a reasonable level, virtualized. Therefore,

many of the traditional paper based processes that accompany a course were replaced by IT based processes.

Learning Methods

The course was also to be virtual in itself, practicing what it preached. Hence, several practices were used to re-engineer interaction with students. Five of them are briefly introduced here.

Virtual Instructor Presence. Similar to a student's presence, the instructor also had an Internet presence consisting of web page, , and e-mail address.

Frequently Asked Questions. Students asking a question (typically asking via e-mail) would receive an e-mail reply stating that their question and answer would be posted on the course's FAQ site.

Assignment Virtual Submission. Students were not permitted to hand in assignment as paper based documents. All materials had to be submitted electronically.

Work-in-Progress. When students submitted assignments, among their key concerns were receipt of the materials and readability of attached materials. Hence, the course website contained a work-in-progress page which listed receipt of materials, grading progress and grading results. Hence students could simply look there, instead of having to ask the instructor.

Virtual Library. With the limited availability of traditional reading materials on virtual work, and the "virtual essence", reading materials should also be Internet based. Of course, any course participant was able to use a simple Internet search engine. But in addition, search for materials was facilitated through the establishment of a "virtual library". The virtual library contains e-zines with free search capability. In addition, students established another virtual library by posting (more or less) useful links related to virtual work on the discussion board.

Conclusions and Lessons Learned

The course presented a fascinating learning experience, not only for the students, but also the instructor. Two instructors taught the course at different time both made same findings about easy and difficult aspects of teaching and learning. The findings are briefly summarized below.

Easy Aspects of Teaching

Easy to Keep Track of Students' Performance. Instructors found that it was easier to keep track of students' participation through the statistical data from systems. For example, instructors could check who the

most active participants are on the discussion board by number of postings.

Easy to Reply. Instructors could answer students' questions in a better way. Students did not need to make any appointment with instructors. They could send their questions to instructors through systems. Instructors then could answer individual question at their available time. Moreover, many students might have same questions. In this case, instructors could use the saved answers to reply to students. Actually, this could greatly save time for instructors as they did not need to repeat the same thing every time.

Easy Aspects of Learning

Easy to Learn Virtual Technologies. An important aspect of the course was to have students experience a significant number of technologies in the role they can accomplish for a business organization. Technologies were chosen to match or exceed those used by companies experienced in virtual work. Students experimented with different technologies, such as chat software, audio and video conferencing software, discussion board group support systems, etc. They could well prepare themselves to use different technologies for virtual work.

Easy to Communicate. During classes, students could network with classmates and instructors. It was found that students could share their ideas with others more effectively and efficient. They had a chance to post questions and ideas and could receive responses soon. They also did not need to drop down notes by using pens and paper. The only thing they had to do was to save the useful notes if necessary. They could retrieve the notes easily later.

Difficult Aspects of Teaching

Difficult to Handle Free-riding in Virtual Assignments. Students free-ride in virtual assignments. Some did not connect at the designated time to virtual meetings, others did not participate in the teams information gathering even over an extended time frame. Assignments were not clearly labelled and sometimes hard to detect among the many e-mails faculty members receive. It was also very difficult to detect when people use aliases in chat sessions. Posting of assignment receipt and work-in-progress was a good workflow procedure, but very tedious. It would be infeasible for large classes without special administrative support or better automation. Clearly, this procedure can be simplified, standardized, and further automated and needs to be in the future.

Difficult to Managing Teaching Facilities. Teaching the course, although it was limited to only 32 students,

required disproportional effort. This was due to the number of technologies that needed to be tested. Limitation in bandwidth may restrict instructional methodologies as performance for sound, animated graphics and video playback can sometimes be painfully slow. Students complained on the very slow responses from systems. However, this limitation is expected to be solved very soon after the bandwidth is well expanded in the near future.

Difficult Aspects of Learning

Difficult to Collaborate. The course let Hong Kong and US student teams link up to do some assignments. Hong Kong students for instance frequently complained that their counterparts in US put much less effort in the team assignment. Several logs of virtual meetings indicated no-shows. They could not receive reasonable replies from the unknown co-worker. This became an important part of the students' learning. Loss of personal contact was a barrier for this collaboration. With the advent communication technologies, students could temper the loss of personal contact. Raising students' awareness of rewards of the assignments might also overcome the barrier.

Success Measures

The course produced a very high level of student involvement. The course web site was accessed at a rate of approximately 1 per student and day. That is, every student on average accessed the course web site once per day! The course discussion board showed over 500 contributions at the end of the course (about 17 per student). Two students sent e-mail to the instructor indicating that this was the best course they had taken in their entire program at the university.

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