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EDITORIAL

I am glad to announce that DEOSNEWS--as one of the first electronic journals in the world--now has obtained an International Standard Serial Number (ISSN). It is one more small step toward appropriate recognition of the value of electronic journals. Hence, it is in a cheerful mood that I distribute this last DEOSNEWS issue before summer vacation. The editor will spend four enjoyable weeks in Norway and one week in Canada, so you cannot expect the next issue of DEOSNEWS before July. DEOS-L, however, will be available for distribution of information and discussions. Fernando A. Senior has already taken over as an intermediate listowner of DEOS-L while I am away. Thank you Fernando.

Abstract

Audio-graphic teleconferencing has been fully utilized in the delivery of teletutorials of all the courses offered via distance education at the University Sains Malaysia in Malaysia. The teleconferencing sessions are delivered incorporating the educational strategy of collaborative learning to provide quality educational interaction and an effective teaching-learning experience, thus enhancing the non-contiguous communication. The elements of collaborative learning appeal to the adult learners and greatly assist in their intellectual development which in turn will benefit a developing country such as Malaysia.

Enhancing Teletutorials via Collaborative Learning
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The latter half of this century has witnessed an increased acceptance and recognition of distance education as an alternative strategy for evolving a complete system of education (Holmberg 1986). Many definitions have been given concerning distance education, but it basically comes down to the fact that students and their lecturer/facilitator are physically separated from each other and that non-contiguous communication thus compensates for the conventional face-to-face classroom communication. How one furnishes this mode of delivery merely emphasises the versatility and conformity of this educational system in order to promote the most effective teaching-learning experience. Distance education may even be the preferred delivery system for certain types of instruction as contrasted with non-feasible conventional

teaching. As an education system, it basically encompasses two operating subsystems unique to distance education, namely, the Course Development subsystem and the Student Support subsystem (Keegan 1986). Technological innovations have thus far rendered tremendous contribution to the support subsystem and enabled the delivery of information in various forms that are suited to various learning styles and give the greatest range of alternative communication modes. Distance Education has also highlighted the concepts of the self-directed learner (Knowles 1985), the independent learner (Paul 1990), situational instruction (Smith 1989), and also collaborative learning (Sheridan 1989).

The Center for Off-Campus Studies (COCS) of the University Sains Malaysia (USM) in Malaysia is the country's sole tertiary distance education institution. Established in 1971, it seeks to fulfil one of the primary objectives of the program, as part of the country's social engineering, that of assisting adults who had missed the opportunity for higher education to qualify for a degree. A full description of the system and program at USM have been presented elsewhere (Idrus et al. 1992).

Telecommunications

Following the successes of the pilot project of Audio Teleconferencing (AT) in 1987 and the pilot project of the Electronic Writing Board (EWB) in 1989, all the tutorials at the Center are now delivered by the lecturers themselves to the students via audio-graphic teleconferencing (AGT). Audio-graphic teleconferencing greatly aided the teaching of the Sciences where two-way real time interaction provides an opportunity for immediate response to questions and the interaction among the participants in the discussion.

Research has shown its (teleconferencing) effectiveness for a variety of cognitive tasks. In general, tasks involving information transmission, problem solving and generating ideas, giving and receiving information, asking questions and exchanging opinions can be done as effectively by telephone as by face-to-face and in some cases more effectively than by correspondence (Robinson 1990)

However, even with the graphic assistance, teaching via teleconferencing requires some adaptation in behavior in communication without visual cues. It also changes communication patterns and the lecturer/facilitator must incite interactive communication and initiate response to queries and information. Students too, differ cognitively and affectively in the development of their multi-talents and enter the program with varied background and experience. Hence, the diversity of the adult student and their varied levels of learning requires sensitivity to their uniqueness as adults. Adults draw from their experience of being in vocation and their maturity in undergoing daily undertakings and this special ability can easily be utilised in their learning endeavor. The highly teacher-oriented and somewhat passive Malaysia students have adapted well to these technological innovations in distance education and an effective teaching-learning environment is sought.

Collaborative Learning

In a society where seeking higher education or qualification is no longer a matter of self esteem, but contributes to promotional aspects and better job prospects as well as meeting the need for skilled and educated manpower for the country's massive industrialization drive, the adult students are highly motivated and goal-oriented. As the setting provides, any learning strategy that appeals to them as adults and works well in distance education greatly assists the students learning capability. To this end,

collaborative learning was highlighted in a working paper presented in a Workshop session at the University Sains Malaysia in Malaysia (Idrus 1991). Collaborative learning is essentially different from the traditional style of education in that the students are involved in the development of their own learning experiences.

The term collaboration describes a voluntary association between two or more organizations, in which agents or representatives of each work together to achieve some separately held and some commonly held objectives. Collaboration involves some sharing of planning, decision making, and resource utilization (Hite et al. 1975).

Specifically it is a pedagogical style that emphasizes the collaborative educational efforts among and between the adult students and their lecturer. The students therefore share knowledge and information with one another and through collaborative learning too, learn with their lecturer, instead of from the lecturer alone. Students then begin to feel and appreciate and experience knowledge as something to be gotten and created rather than sitting passively taking notes or listening passively to their teacher.

It is the use of knowledge rather than knowledge itself that is affected by the nature of its consequences. Use implies performance; performance entails action (Bruner 1986).

The Malaysian students are thus transformed into active doers and this somewhat removes the pedestal onto which the lecturers are placed and the student-lecturer relationship becomes one of mutual respect; slowly detaching from the much accustomed hierarchical classroom situation/condition.

The task of the lecturer in the preparation and implementation of a teleconferencing session is not an easy one. Apart from preparing a tele-tutorial (including the preparation of an agenda despatched a month earlier), knowledge of the subject matter, pedagogical expertise, and the ability to use the technology, they have to create an intellectually and emotionally attractive "telepresence" and build "virtual communities" of learners (Dede 1990). Therefore the teleconference sessions have to be structured to provide socio-emotional support and the feeling of shared space to the students or among the participants. A list of mediator skills for a successful teleconference session have been presented (Boone 1985).

The Malaysian Scenario

The trials and tribulations of the Malaysian students undertaking a distance education program can be appropriately summarised in accordance with a research result:

Often the student must "leave" a part of himself behind as a consequence of being a student. This may mean a change in friendship, activities and/or hobbies. This study found that students experience a significant decline in their level of physical ability and level of fitness; they have fewer hobbies; their social life is less active than in their pre-student days; they find they have less in common with friends from pre-student days; and they participate in fewer community and civic activities. Therefore the changes of lifestyle may be a reflection of something more fundamental than simply becoming a student and may have its "roots" in developmental changes (Lauzon 1989).

Collaborative learning worked in two phases. Students attend their

respective teletutorials and laboratory sessions at 12 regional centers situated throughout the country. Initially the students get together for about one hour before their teletutorial session to study collaboratively without the lecturer. Each student would have done their own research and study as soon as they received the agenda for the session. This one hour session prior to the teleconferencing served many purposes. In order to ensure one-hour quality educational interaction time, the session must also contain quality discussions. Therefore through collaborative learning, students discuss their topic and iron out the basics and easy problems among themselves. Weaker students learn from the more proficient and this too helps them reinforce their basics; this is very important especially in the science courses. In view of this, other work also suggested that the collaborative process which encouraged the intellectual skill of critical and mutual inquiry facilitated content recall (Welds 1986). In the end, the students have a pool of questions common to the group for the teletutorial. This is implemented throughout all the regional centers. This will ensure quality questions from each group although some overlap might occur with the other regional centers. Now they have the initiative with regard to their own learning and that of their course-mates and because all contributions are received in the spirit of genuine respect, the students themselves provide the motivation for the group, provide immediate feedback on team ideas, and their sense of self-esteem is enhanced. They will feel more comfortable with their independent study and they will feel more confident in relating their problems later on in the discussions. This collaboration among the students is important because sometimes students can relate their problems better among fellow students. This interaction also helped to extinguish the seclusive and secretive habit of the Malaysian students, who for some unknown reason prefer to perform alone and in their own environment. This negative attitude comes unstuck when faced with a problem in independent learning.

Then came the teletutorial proper. Guided by the agenda previously dispatched, the lecturer facilitates the discussion and readily enters the discussion and process of mutual inquiry and relates to the students as a knowledgeable co-learner. The electronic writing board effectively mediates communication in the process as sometimes students may not be able to relate a concept verbally and the lecturer too has the opportunity to visually elaborate phenomena to avoid misconceptions. Apart from the lecturer creating telepresence, the students active participation in the collaborative learning atmosphere also helps overcome the feeling of alienation that is inherent in distance education.

This pedagogical strategy is very effective because students simultaneously experience (a) the active construction of knowledge; (b) peer teaching, with its opportunities to build oral explanation skill; (c) peer learning, with exposure to good models for problem solving and social interaction; and (d) the motivating feedback of other students (Dede 1990).

Perhaps it should be pointed out that collaborative learning is not yet conducted for all the courses available at the Center but is emphasized in the Foundation Sciences Program. The students also adopt the same procedure during the compulsory three-week annual residential school at USM where they get together in collaborative learning before the actual tutorial/lecture session. Therefore, our program is in a unique position where collaborative learning is implemented during face-to-face interaction and also via the teleconferencing sessions. There are also no reports of collaborative learning analysis from the Center although research along that line is currently in progress. The credibility of the strategy is well established with instructional strategies (Kagan 1988) and also the results of years of observation and study (Goetter et al. 1990); that the strategy was readily adopted for our purpose was the obvious decision.

Conclusions

This article described how our current use of audio-graphic teleconferencing in the delivery of the teletutorials in distance education can become an effective, stimulating, character building, and powerful educational medium by incorporating the collaborative learning strategy. Distance education has developed into a new educational system that is capable of fulfilling mass education and is still undergoing significant growth. It is even becoming a popular term among lifelong educators (Clark et al. 1989). The availability of new communications and instructional technologies enabled the distance learning classroom to deliver a wider and deeper range of skills and greater opportunities for students to communicate and interact than the traditional classroom situation.

Audio-graphic teleconferencing provided the opportunity for real time two-way audio and graphic interaction between the lecturer and the adult students. Teletutorials require more discipline and concentration than face-to-face situations and although they can be demanding and tiring, they help train the students to be disciplined and confident (Ensley 1985). The uniqueness of the educational transaction setting and the diversity of the adult learners called for effective learning strategies to adequately satisfy quality teaching-learning experience. Research on the use of collaborative learning in higher education is not extensive, let alone the use of collaborative learning in distance education. However, the collaborative learning strategy worked well with adults and it was also suggested that collaboration is the generator for developing within the adult the motivation and ability to mature into a sustained, satisfied, and self-directed learner (Goetter et al. 1990). When the adult students, who have been away from formal schooling for some time, enrol in the program they undergo changes in their lifestyle as a consequence of being a student. Relationship between family and friends, and pre-student day activities too, must be appropriately rationed to provide for their learning needs. Collaborative learning can also be effectively employed to counteract these changes; course-mates become new friends and the quest for knowledge and the interaction during study become the new activities and social interaction. Collaborative learning will therefore expand the students' learning experience and capability from individual insight to collective intelligence. This too is in line with our effort to enhance our students' intellectual development, growth, and academic performance and will contribute to the country's need for skilled and educated manpower. In the 21st century, the students' learning environment will expand from beyond the formal classroom setting, so too must the teaching skills and the learning strategies employed in the ever evolving educational systems.

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