Approaches to Peer-to-peer Learning in the Adult Disadvantaged Population

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Abstract

This paper concerns the design of the Collaborative Open Learning Technologies (COLT) project, led by Dr. Larry Katz, Faculty of Kinesiology, University of Calgary. COLT partners include: Calgary Smart Communities, First Nations (Tsuu T’ina), and iW Technologies. In addition, Bow Valley College, a diversified secondary institution encompassing career training and upgrading, is a research partner providing students and research staff.

The objective of the COLT project is to provide the adult, disadvantaged learner with the concepts needed for skills acquisition in computing and technology use, through collaborative approaches. This process will be supported by computer communications and multimedia technologies. Success will be defined by learners acquiring the requisite skills with improved conceptual understanding, and increased employment potential.

Background to the COLT Project

The COLT project was motivated by the work of Ali Reza Rezaei, whose PhD research at the University of Calgary involved constructivist approaches to science education which dealt with the correction of misconceptions.

The basic premise of COLT is that peer-to-peer learning, through discussion, collaboration, and interaction, is a positive way to improve outcomes. This process is designed to reduce misconceptions and strengthen appropriate concepts.

As part of the research model a learning group comprised of disadvantaged adults has been selected as a client base. These learners will be selected from clients found at Calgary Smart Communities (Bow Valley College and the Mustard Seed), and students in the Tsuu T’ina Nation Adult Education Centre. The specified learning materials will be related to acquiring basic computer skills (e.g., word processing) using job related content (e.g., resume writing). Basic computer skills taught within a job related context have been shown to increase employability [4]. Both face-to-face and computer collaboration technologies are to be used in peer-to-peer learning sessions and compared with self study. The design will take into consideration social and economic context of the adult learners.

As part of the research model, the COLT Project, according to Chang [1], requires that a number of key considerations be successfully integrated by:

- Identifying the characteristics of disadvantaged adult learners.
- Choosing one or more computer technology courses relevant to the learner population.
- Identifying the concepts underlying the course content.
- Identifying the specific peer-to-peer learning protocol to be used.
- Selecting appropriate computer resources to support peer-to-peer learning.
- Preparing the course material for the peer-to-peer learning to be used in both the face-to-face and the computer-supported interactions.
- Evaluating the success of COLT, which includes evaluation of learning outcomes, the acceptability of the peer-to-peer process, measures of cost and effectiveness, assessment of scalability and transference to other content and other domains.

Conceptual Issues

Three models form the basis of this research project: Mazur’s [5] Peer Instruction Model or peer mediated learning in which students first discuss problems posed by the teacher and then hear the
authoritative answer; the Inventive Model [7]; and, the Collaborative Learning Model [2].

In the disadvantaged adult population, the challenges to peer tutoring are formidable. This is primarily due to the lower levels of peer acceptance, social and interpersonal skills, tutoring skills, and continuity of presence. Moderated cooperative learning, on the other hand, requires more from the facilitator, and less from the learners. Hayes, as described by Kerka [3], details some of these challenges of disadvantaged adult learners as low self-confidence, social disapproval, situational barriers, negative attitude toward education, and low personal priority.

Computer Mediated Cooperation

Another dimension important to COLT, is the introduction of computer technology in mediating peer learning. Peer learning will be in both the face-to-face social situation and the synchronous, computer-mediated environment. A group of learners will also be assigned to an individualized learning program. If peer learning adds significant value, then this difference should be identifiable when compared to the individual learning.

Program Planning

Computer mediated cooperative interactions, face-to-face cooperative learning, and a paired work team approach that offers collaborative misconception correction will be implemented in all research venues. The three comparison groups are: face-to-face, peer-to-peer distance learning and self-paced learning. Course duration will vary from two hours to full semester courses. The computer technology courses are being chosen, and work remains to be done in identifying common misconceptions and structuring cooperative learning materials that address their correction.

Needs/Assessment

A needs/assessment study was undertaken as part of the COLT program by Lyndon [4]. The main findings of this study indicated that the computer course most useful to the learning to facilitate computer literacy and entry-level employment was word processing. According to Myhre [6], training in computer and technology skills increases employability in this group by as much as 75%. Learning alone, in a group, and one-on-one situations have been shown to be equally effective. However, increasing one-on-one support has been shown to be highly advantageous and desirable. As such, developing a peer-to-peer learning model would have far reaching implications.

Approaches to Evaluation

As part of the initial design, Scialfa [8] provided a series of recommendations on approaches to evaluation, based on the literature and focus groups of the study populations. Ethnographic and multivariate techniques were suggested.

Outcomes

The COLT project will be evaluated on its outcomes – effectiveness of learning outcomes, efficiency in terms of additional effort if any, social and interpersonal skills acquisition needed for cooperative learning, effort required to create the misconception correction materials needed, the applicability of the COLT approach to other domains, and its scalability to the adult learning population at large.

References