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This paper discusses how cross-cultural e-mentoring facilitated inquiry-based learning through community and knowledge building and the multiple roles e-mentors played in fostering transformative learning in protégées. A series of professional development programmes on "online tutoring and mentoring" were conducted by the Distance Education Modernization Project (DEMP) implemented by the Ministry of Higher Education in Sri Lanka. These programmes were conducted in the form of a blended online course using the MOODLE learning management system. The main aim of these programmes was to develop the capacity of faculty and other professionals who would be responsible for designing and delivering online programmes. One of the online activities in this course was to develop the capacity of the participants to facilitate inquiry-based learning using cross-cultural e-mentors. In each round of training, participants were divided into three groups (about 8-11 participants in each) to solve a social problem, using three inquiry-based learning formats: problem solving, role-play and case-based reasoning. The e-mentors were graduate students at the University of New Mexico, in the United States. Their goals were to facilitate the interactive activity and help the Sri Lanakan protégées solve the problem through negotiation of meaning in an online environment. The transcripts of participants in 3 rounds of training and their interactions with e-mentors were analysed. Results showed that the cross-cultural e-mentors demonstrated

different strategies to help protégés to find solutions, help them build the online community and to construct knowledge by building on each other's posts. Their contributions range from 15% - 41% of the total posts. They exhibited multiple-roles; pedagogical, managerial, technical, social, collaborative and inspirational. Protégés acknowledged that e-mentors transformed their perspectives on the social problems they dealt with, and methods of online learning.

Introduction

Driven by the problems of access and equity in higher education, the government of Sri Lanka sought alternative forms of delivery to fulfill the demands of higher education. In an attempt to address this issue, the Distance Education Modernization Project (DEMP) was established under the Ministry of Higher Education in Sri Lanka, funded by the Asian Development Bank (ADB, 2003). A professional development programme on online tutoring and mentoring was conducted by the DEMP in order to develop the capacity of faculty and other professionals who would be responsible for designing and delivering online programmes through the National Online Distance Education Service (NODES).

This six week training programme was delivered in the form of a blended online course using the MOODLE learning management system. There were three face to face sessions; one at the beginning, one in the middle, and one at the end of the programme with online interactions in between. There were 14 online modules in MOODLE covering different aspects of online tutoring. This research study was based on one module (module 9 - mentoring) which was designed to help the participants to develop their capacity in community building and knowledge construction through cross-cultural communication with e-mentors for a period of three weeks by participating in an inquiry-based learning activity. Participants were divided into three groups (group size 8-11). These three groups used a different instructional strategy to solve a social problem in Sri Lanka: problem solving (clean up garbage), role-play (traffic congestion) and case-based reasoning inquiry (street children). All three groups engaged for one week to plan how to conduct the activity online and the remaining two weeks to discuss the problem, find solutions, compile and submit the report online. They were also given the opportunity to learn how to write a report in a collaborative online environment using a wiki; in-built feature in MOODLE. Each group was facilitated by an international e-mentor who was a graduate student at the University of New Mexico, in the United States experienced in interactive online learning. In addition, one global e-mentor who was a Sri Lankan was assigned to oversee all three groups. The lead trainer of the professional development programme also assisted the three groups and was responsible for assessing all participants and evaluating the final report. The goals for e-mentors were to facilitate the interactive activity and help protégées to solve the problem through negotiation of meaning in an online environment thereby helping them to develop their tutoring and mentoring skills.

Several such rounds of training were conducted for faculty in universities and other professional institutions resulting in capacity enhancement and professional growth of a large number of online tutors and mentors in the country.

Purpose

The purpose of this research paper is to identify the roles played by the cross-cultural e-mentors when they facilitated inquiry-based learning in a group of university faculty/teachers and professionals in organizations in Sri Lanka.

Research Questions

1. How did the cross-cultural e-mentors facilitate inquiry-based learning online?
2. What were the emerging roles of e-mentors?
3. What were the benefits and challenges of cross-cultural e-mentoring?

Conceptual Framework

Mentoring was defined as a didactic relationship in which a mentor, a senior experienced person, provides guidance and support to a less experienced person, the protégé (Hunt & Michael, 1983) or a 'mentee.' E-mentoring is the short form of 'electronic mentoring' and has been termed as telementoring, cybermentoring, online mentoring and virtual mentoring (Kasprisin, Single, Single & Muller, 2003). In general, mentors perform three major functions *viz.* vocational or instrumental support, psychological support and/or role modeling support (Ensher, Heun & Blanchard, 2003).

Bonk & Kim (1998) identify 12 forms of mentoring and Angeli, Valanides & Bonk (2003) categorize these into three: low level mentoring (social and cognitive acknowledgment, general advice/scaffolding/ suggestions, feedback direct instructions, questioning, modeling/examples); high level mentoring (cognitive task structuring, push to explore, cognitive elaboration /explanation, fostering reflection/ self awareness, encouraging articulation); and management (through private email or discussion). In higher level mentoring, the intention of the mentors was to guide students to develop higher order thinking skills rather than allowing them to engage in surface learning. One of the instructional strategies that is used to develop higher order thinking skills is Inquiry-based learning (IBL). In IBL, learners engage collaboratively and form problem-solving communities (Jonassen, 2004).

Effective communication in cross-cultural problem solving communities requires sharing, understanding, and appreciation of different value systems instead of imposing one's culture on the other (Liu, 2007).

Method

The main research design of this study was the qualitative analysis of computer transcripts of the e-mentoring module in Moodle where participants interacted with cross-cultural e-mentors in three IBL formats: (problem solving, role play and case-based reasoning). In addition, descriptive data on all messages posted were obtained from computer logs. For the content analysis, a message was used as the unit of analysis in accordance with the argument put forward by Gunawardena, Lowe and Anderson (1997). They stressed that the process of learning such as building upon each other to support or refute arguments and negotiate meaning could not be analysed fully by breaking individual messages down into units of meaning as proposed by Henri (1992). The grounded approach used by Lincoln & Guba (1985) was used as the framework to identify the main roles of the e-mentors that emerged during the coding process. One of the researchers categorized the roles into six categories: social, pedagogical, managerial, technical, collaborative and inspirational by reviewing the coding of the computer transcripts by the other two researchers. The coding was verified by the entire research team. Further, frequencies were also used to quantify the main categories that emerged related to e-mentors. In cases, where a posting could be classified in more than one category, it was scored as a fraction of each as pointed out by Goold, Coldwell & Craig, (2010).

Results and Discussion

There were 30 participants in round 1 (10 each in the three IBL groups), 33 in round 2 (11 each in the three IBL groups) and 17 in round 3 (9 and 8 in each of the two groups) See Figure 1. All participants were professionals with diverse educational backgrounds, however, in round 3 all were from the same university in similar disciplines and the majority were younger females. Round three had only two IBL groups. The majority of e-mentors were females.

1. How did the cross-cultural e-mentors facilitate inquiry-based learning online?

Figure 1 displays the number of posts in each round. The problem solving activity in two rounds generated almost an equal number of posts by e-mentors and protégés. The relationship of the frequency of mentor's posts to protégés' posts was clearly evident in the role play activity, where the fewer the frequency of e-mentor's posts, the lower the protégés' posts. However, case-based reasoning in round 2 generated comparatively more posts by the protégés' irrespective of the number of e-mentor posts (lowest in all

groups). The highest number of posts was generated in the case-based reasoning group in round 3 that dealt with street children. The detailed analysis of the transcripts of the protégés' in this group indicated that their approach was different than the rest of the groups as they engaged in extensive exploration of different ways to solve the problem collecting primary data, some drawing from what they have seen in their respective areas, others actually visiting childrens' homes and interviewing street children, their parents, and government officials to try and understand the root causes of the problem. Others searched for literature that would explain causes and posted their findings. This was different in the other groups that relied primarily on secondary data, web resources in particular. The other reason may be that group 3 had difficulty using the wiki for report writing and used the forum to upload different versions of their report.
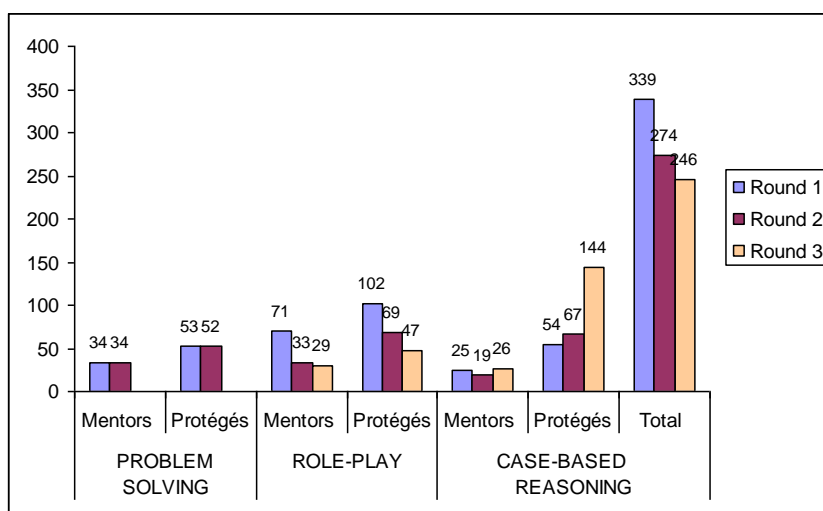

Figure 1 – Number of posts in all rounds

The contributions of the e-mentors range from 15% to 41% of the total posts; highest contributions were observed in round 1 role-play (41%), closely followed by problem solving in round 2 (40%) (Table 1). The lowest contribution by the e-mentors was observed in round 3, the case-based reasoning activity (15%), however the number of postings by the protégés' were highest in this group.

Table 1 - Contributions by all e-mentors

Rounds	Problem solving	Role-play	Case-based reasoning
Round 1	39%	41%	32%
Round 2	40%	32%	22%
Round 3	-	38%	15%

The detailed analysis of the transcripts showed that the cross-cultural e-mentors demonstrated different strategies to help protégés not only construct knowledge but also help them in community building. Some strategies used by them were clearly related either to knowledge building (eg. instructional strategies) or to community building (eg. encouraging all the participants), whereas in other strategies (eg. organizing project work) the demarcation was blurred and demonstrated both elements.

2. What were the emerging roles of e-mentors?

The emergence of different roles was observed through the analysis of the transcripts with respect to the strategies used by the e-mentors. Some of the knowledge building strategies used by the e-mentors were providing guidance on techniques for conducting IBL as most of the protégées were unaware of these methods: asking thought provoking questions, paraphrasing, summarizing etc. which were grouped as 'pedagogical'. The community building strategies were initial self introductions, greeting each other, encouraging and praising the participants which were categorized as 'social'. The strategies related to conducting and completing the activity within the stipulated time were categorized as 'managerial' such as giving instructions, assigning roles, giving timelines etc. The strategies such as providing technical help or directing to a technical person were grouped as 'technical'. The 'inspirational' category indicated a change in the protégé's thought processes as a result of a mentor's post. The strategies used for promoting group collaboration were grouped as 'collaborative'.

There were individual differences observed in e-mentors approaches, and different e-mentors used different approaches and strategies. The following quotes provide examples of selected e-mentor roles.

Pedagogical
The following post exemplifies an e-mentor stating the goals and objectives of IBL.

> *... During our process of achieving this goal we will most likely learn skills and content related to this course's curriculum, including new knowledge and perspectives on homelessness, new knowledge about case based learning, and new **knew** knowledge about how to be an online tutor for case-based learning. This style of instructional design values 'experiencing' the process of finding a solution to a complex problem! (Round 1, Group 3, Post 30).*

Inspirational

The following two quotations are from the case-based reasoning inquiry in Round 1 and 2 after the posting of a story with personal relevance by the lead trainer (e-mentor) .

> *"Actually we see street children every day and sometimes regard them as "nuisance". When we were assigned to do this as a group activity, I was thinking what to write! After discussing this topic for one week, I think all of us got interested and see the real picture of street children and really wanted to do something for them by actually doing! So thank you Prof. Lani for inspiring us! I think all of us will see them differently when we meet them next time. As a result of this learning issue let us get together and try to help them not only online but in a real situation (Round 1, Group 3, Post 43).*
>
> *"A very touching experience. Thanks for sharing it with us. It's a new point I see... ". We help them by paying for their work, without letting them beg"(Round 2, Group 3, Post 24).*

This clearly indicates how the e-mentor was inspirational in changing the perspectives of the participants in relation to street children. This view was supported by the following quotation from the lead trainer.

> *" I am so glad that this discussion has made a difference in your thinking. I think this is a good example of what we call social construction of meaning, and transformative learning in the sense of changing our perceptions on an issue"(Round 1, Group 3, Post 44).*

The following quote was also from case-based reasoning (round 3) to indicate how "emotional" was the learning experience for them.

> *This is something that I wish I'd never have to write..ever. But thought I'll share with you because I want to just say... maybe another thank you, even in our forum. And this shows the plight of these kids. Remember X and I visited Maddumabandara Vidyalaya where we were even able to speak to a couple of street kids? X's has mentioned our experiences in the attachment. We spoke to one Mohammed Nazar. And about a week afterwards I'm sure many of you heard about two kids being drowned in the Mahaweli river, having going to bathe there. It's tragic that one of the kids happened to be Nazar. I heard that it was a kid who visited the center and didn't want to think of the remote possibility of it being him! But well... (Round 3, Group 2, Post 120).*

Collaborative

The following is an example of a collaborative post inviting others to participate.

> *Hello everyone! Yes, please all jump in to our problem-solving activity. What ideas does everyone have for implementing actions to solve Colombo's garbage problem? Once posted, please comment on each other's ideas and suggestions. Agree? Disagree? Both? By engaging in dialogue rather than debate you'll begin to move toward a solution that is truly collaborative in nature (Round 2, Group 1, Post 12).*

The analysis of this study, reported six roles of mentoring: pedagogical, social, managerial, technical, inspirational and collaborative. In studies conducted with online tutors/teachers have also identified four tasks or role domains (Berge, 1995, Kim, Lee & Lim, 2010). They are pedagogical/cognitive/intellectual, social, managerial/organisational and technical. However, in this study two additional roles have been identified as "mentoring roles" (inspirational and collaborative). Therefore, these cross-cultural e-mentors have used various strategies to develop and enhance the existing capacity of less experienced Sri Lankan protégées and thereby empowered them to function effectively as e-mentors in their own culture.

3. What were the benefits and challenges of cross-cultural e-mentoring?

There are many benefits of online cross-cultural e-mentoring for both e-mentors and protégés. The benefits for protégés are:

- accessing e-mentors who have experience in inquiry-based learning and learning about moderating strategies, techniques, tools, and learning resources
- guidance and direction on different instructional strategies, and constructive feedback and reinforcement
- different perspectives on common social problems and how they are dealt with in different countries.
- Opportunity to probe and clarify certain issues that would otherwise have been taken for granted in the local context.

The benefits for e-mentors are:
- understanding social problems in another culture
- awareness of how to scaffold the learning process in another culture
- an opportunity to learn from the interactions in an online cross-cultural environment leading to continued personal and professional development

The challenges are to:
- devise new strategies for knowledge construction and community building when dealing with protégés in different cultures
- ensure communication in the online environment is interpreted accurately
    - between English as a second language, and native English speakers
    - between direct and more indirect speech and low context and high context speakers as reported by Hall (1973).

Conclusion

Cross-cultural e-mentoring was an effective strategy for promoting an understanding of IBL. E-mentors used different strategies and roles to help protégées develop their capacity as future online tutors and mentors. In some cases participants changed their original opinions or preconceptions as a result of their engagement in the learning process, a clear indication of transformative learning. The significance of this study is that it demonstrates a method of faculty development facilitated by e-mentors in another culture who used IBL formats to develop problem solving skills in their protégés who engaged in finding solutions to social problems. Such skills are applicable to training problem-solving multinational teams connected via technology.

Acknowledgements

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