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Using Technological tools to solve group work problems in higher education of under developing countries: a case study

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ABSTRACT

Group work activities are one of the main point or task in the high education. Switzer and Shriner (2000) were of the view that students are the most obvious party who benefit from group work among students, faculty members, and the community. According to them there are four overlapping types of benefits for students. These are: 1) immediate educational benefits, 2) immediate social benefits, 3) critical thinking benefits, and 4) long-term career benefits. Lawrance (1992) , and Yates (2001) were of the opinion that face to face communication will not solve the empowerment problems in group work activities.   As, through FTF interaction male dominant role can be produced due to identity of speaker, eye contact, nodding, moving the hands , and facial expressions etc. In this situation suitable adoption of technology can be consider as an alternative mode of communication, where there is a chance of discrimination.

This case study will be a further step in addition to the previous technological tools & group work related researches. In this researcher will try to explore that how suitable technological tools can play a role to over come the group work problems and to increase the performance of the students in the developing countries like Oman.

Keywords

GROUP WORK, E-LEARNING, HIGHER EDUCATION, COMPUTER MEDIATED COMMUNICATION

PROBLEMS WITH GROUP WORK

Group work has so much potential in all aspects of life, especially in the higher education. Now the question is why college or university professors do not more regularly utilize group work activities in the situations like current environment? The answer lies in the obstacles that stop professors from integrating these group work strategies into their course work. For example, some faculty members are concerned about time, and group work activities require more time and attention from instructor. In addition to this, instructors from some specializations are not trained enough to create, direct and implement group work activities into their courses (Colbeck et al. 2000, cited in Elizabeth, Monk, & Brian 2005; Michaelsen et al. 2002). In the current environment there are lacks of staff development activities, as a result faculty do not get proper training in group development strategies on the job. This reason makes it easier for faculty with lesser group development skills, to rely on traditional lecture strategies in the current and similar type of environments.

Another big problem faced by faculty members in a group work is the distribution of grades, in which they evaluate the individual and over all group performance. (Michaelsen et al. 2002; Millis and Cottell , 1998). For example in the current environment, faculty cannot exceed any assignment or group related task more than 10 percent of the total course grades. If one needs to exceed, he/she has to take approval from college academic committee with proper justification. Students are very much concerned about the grades of a task and expected time in the completion to that task. Sometimes a good group work efforts needs more appreciation than standard 10 percent. Even Michaelsen et al. (2002) recommended that students be involved in developing their grading systems. This motivates them to work on certain project with their suggested grade distribution.

 In addition to the grading, in many situations other questions arise. Who pick the groups? How should the groups be established? Facing these kinds of minor and major problems, sometimes make it simpler for faculty to have an alternative of using group tasks (Millis and Cottell 1998; Michaeslsen et al, 2002).

On the students side also sometimes they present their problems to faculty in using group work. Better students may prefer to work on their own when faced with the option of working with students who do not contribute equally to the group. This was also highlighted by Maranto and Gresham's (1998) research, about using the World Series shares to fight free riding in group projects. According to them failing to contribute to group work is known as "free riding" or "social loafing" among social psychologist. In many cultures and societies these complaints about free riders are the most common criticisms and problem that students have regarding group activities (McKinney and Graham-Buxton 1993).

Other than the discussed problems, an important factor influencing group work activities is empowerment problem due to gender, while dealing with mixed gender groups. Stromquist's (1993) categorize empowerment into four useful categories. These categories include: Cognitive empowerment, Affect empowerment, Economical empowerment, and Political empowerment. More relevant categories of empowerment in educational group work activities are the following:

1) Cognitive empowerment refers to knowledge, and understanding of condition, topic, and situation. For example, feeling empower and confident after having knowledge of a certain topic.

2) Affect empowerment relates positive or negative feeling. Further these feelings can be a cause of women's action, influence, motivation, attitude, and anxiety.

E-LEARNING AS A SOLUTION OF EMPOWERMENT PROBLEMS

There are many definitions of e-learning; Derek Stockly (2003) provided a useful and working definition of this style of learning. According to him "e-learning is the delivery of a learning, training or education program by electronic means". These electronic means can be any computers, mobile phones, and any electronic devices.

The world is adopting new technologies in all aspects of life. In education these technologies are producing positive results, such as the concept of traditional classroom changes to online learning, where students learn in invisible classrooms (Sutherland, 1999). Popularization of these technologies are not limited to online learning, rather it is becoming essential part of all aspects of teaching, for example teaching methods have changed communication styles from traditional style of lecturing to multimedia presentations. Teachers and students are applying this technology in all kinds of their lectures and presentations.

Some studies have concluded that students are feeling more comfortable when communicating with others through the mode of computer. E-learning is a very useful mode of learning among students, as it changes behavior and thinking of students, by providing powerful tools of learning (AAUW, 1999).

McGuire, Kiesler, and Siegel (1987) worked on the ability of problem solving in mixed gender educational environment. Results of their research showed an interesting outcome; according to them during face to face mixed group discussions averagely males gave five times more first suggestions for a solution. But when the same type of problem solving communication were repeated on same type of groups, using computer mediated mode of communication, averagely females gave same proportion of first suggestions as of males. According to McGuire, Kiesler, and Siegel's argument this improvement in feedback was due to replacement of traditional communication methods with the use of electronic learning in the educational environment.

On the other side, Hightower and Sayeed (1995) were against the use of e-learning in group work activities of higher education. According to them, groups using e-learning were less efficient in sharing information and tended to focus only on a portion of the information available as compared to face to face groups. Reid, Malinek, Stott, and Evans (1996) rejected the claim of Hightower and Sayeed; they supported the use of e-learning through their research conclusions. In their research argument they said that e-learning can produce much better results as compared to face to face interaction, for a complex communication such as problem solving and decision making.

CONTEXT

The Omani society and as part of the Arab society in general lies under a patriarchal system which at occasions fails to overcome problems in relation to female / male interactions in educational contexts. This is due to cultural barriers that exist in the society but are very frequently transferred to the inside of the classroom. Higher education stands today as a very good opportunity for students' empowerment, especially when we think about the benefits drawn from the use of new IT techniques. How can IT empower students? As situations like the current environment, face gender related problems in conducting group work activities. To answer this question, this paper targets the Omani male and female population within the context of higher education as subjects and e-learning as a tool of measurement, a sample of students from Dhofar University (in south part of Oman) were selected. Results of this sample tried to shed light on some aspects in relation to Affect and Cognition in FTF versus e-learning situations.

RESEARCH QUESTIONS

On the basis of the background data provided, current case study has following research questions:

- Do e-learning tools help students to generate affect empowerment during group work activities?

- Do e-learning tools help students to generate cognitive empowerment during group work activities?

METHOD

This study was carried out in Dhofar University (Oman) involving undergraduate students. It divided the students into balanced mixed groups (male & female); all the groups were treated equally and they communicated with the help of e-learning tools during their group work activities. It was not suggested to make any control group of face to face communication due to the cultural and religious issues (open face to face communication of different genders is forbidden culturally in this community) these students had with face to face communication in collaborative group work.

The current case study tried to explore the relationship between e-learning technology use and empowerment process. From the start of the semester each group was given a task. Each group had to work collaboratively on their group assignment. This was the first time in the University when mix gender groups worked together to perform their tasks, to overcome their cultural barriers, and to solve their empowerment problem due to face to face communication in the group work activities. Yahoo online groups were selected as the base to online communication for group work activities. Students were given training sessions in the beginning of the course to use the Yahoo online groups more efficiently for their group work communication. This training helped them to understand the components, and characteristics of this mode of communication.

This research made use of online working groups; each group member (male or female) communicated with other group members to discuss his/her group assignment task/activities. In each group there was a group leader from the students (male or female), who led the group in the entire group task. The group leader was responsible to break down the work of the assignment among the group members. All these communications between the group members were through the online message board and there was no face to face communication. Every group member was bound to submit his work report at the end of each week or within the time frame given by the group leader.

Group members were sending messages about their progress, collecting information about their tasks, sharing the files, sharing the calendar, sharing the databases, and sharing their on- line group communication statistics through yahoo online groups' website. All the communication was related to course work, and any personal communication was prohibited. Only authorized group members and the course instructor could view their group communication. The students of one group could not see the communications of other online groups due to password protection.

Questionnaires were developed as a tool to collect pre and post data. In order to have more reliable data from these tools of data collection, Arabic translation of these questionnaires were also attached with the English questionnaires. To check the validity of the questionnaire CRONBACH'S ALPHA TEST [David, Petrick 2005] were applied.

RESULTS

Do e-learning tools help students to generate Affect Empowerment during group work activities?

To explore the effect of e-learning in generating affect empowerment of the students during group work activities, pre and post questionnaires were used to collect the data; this reflected the attitude before applying the tool of e-learning and after applying the tool of e-learning. As this data was representing the pre and post attitude of the same sample, so paired t-test was the most suitable test to check any significant difference between pre and post test attitudes, towards group work activities. Following are the results of the paired t-test in table 1:

T Test Significance(Affect Empowerment)		
Gender	**Significance**	**Analysis**
Male+ Female	P < 0.01	Highly Significant
Male	P < 0.01	Highly Significant
Female	P < 0.01	Highly Significant

*Confidence level 99%   (Table1)

In the table1 it is clear that when analyzing affect empowerment level on the basis of male and female (all students) together, there was highly significant difference at the level of 0.01 (P < 0.01). It means there was significant difference and there was 99% confidence that significant change could be due to e-learning tool. A highly significant difference (P < 0.01) between pre and post affect empowerment level of the male students, when they were considered separately. Same trend of high significance change (P < 0.01) in affect empowerment level was observed in the female segment during paired t-test analysis.

Results of our research showed that there is significant change in the affect empowerment level of students after using e-learning tools in group work activities. And research rejected Null hypothesis that there is no pre and post test significant change in the empowerment level of the students.

Do e-learning help students to generate Cognitive Empowerment during group work activities?

To explore the effect of e-learning in generating students' cognitive empowerment during group work activities, pre and post questionnaires were used to collect the data; this reflected the attitude before applying the tool of e-learning and also after applying the tool. As this data was representing the pre and post attitude of the same sample of population, so paired t-test was the most suitable test to check any significant different between pre and post test attitudes towards group work activities, and level of cognitive empowerment. Following were the results of the paired t-test in table 2

:

T Test Significance(Cognitive Empowerment)		
Gender	**Significance**	**Analysis**
Male+ Female	P < 0.01	Highly Significant
Male	P < 0.01	Highly Significant
Female	P < 0.01	Highly Significant

*Confidence level 99%   (Table 2)

In Table 2 it is clear that when analyzing cognitive empowerment level on the basis of male and female together there was highly significant difference at the level of 0.01 (P < 0.01). It means there was significant difference, and there was 99%

confidence that significant change might be due to use of e-learning tool. A highly significance difference ($P < 0.01$) between pre and post cognitive empowerment level was observed for the male students. Same trend of high significance change ($P < 0.01$) in cognitive empowerment level was observed in the female segment during paired t-test analysis.

Results of our research showed that there is significant change in the cognitive empowerment level of students after using e-learning tools in the group work activities. And research rejected Null hypothesis that there is no pre and post test significant change in the empowerment level of the students.

DISCUSSION

Results showed that there significant change in the empowerment level of students after using e-learning tools in group work. Now it is also important to know that that change was positive or negative. For this purpose average percentage was calculated.

Table 3 shows percentage change in affect empowerment level of students after applying the tool of e-learning in group work activities. Overall students were feeling 9.9070 percent changes (improvement) in their affect empowerment, after using e-learning. By focusing on only male students this averages percentage decreased to 5.6 percent (lesser than overall average 9.9). On the other side female students' average percentage change was positive and 14.28 percent (higher than overall average 9.9).

Gender	Average Percentage Change in Affect Empowerment
Male+ Female	9.9070
Male	5.6000
Female	14.2813

Percentage change in affect empowerment level   (Table 3)

In order to have idea of the change of cognitive empowerment level, also average change in cognitive empowerment level was calculated. Table 4 showed average percentage change in cognitive empowerment level of students after using e-learning. Overall students felt 6.1240 percent changes in their cognitive empowerment level after using e-learning in their group work activities. By focusing on male students this average percentage decreased to 2 percent (lesser than overall average 6.12). On the other side female students' percentage change was positive and 10.3125 percent (higher than overall average 6.12).

Gender	Average Percentage Change in Cognitive Empowerment
Male+ Female	6.1240
Male	2.0000
Female	10.3125

Percentage Change in cognitive empowerment level   (Table 4)

CONCLUSION

Students can work and learn affectively through affective and cognitive positive situations. In this study, research departed from the assumption that the educational context is a good opportunity for males and females to challenge their present position since knowledge and knowledge acquisition are always outlets towards change. The research has explored the theoretical background of what constitutes group work problems, mainly empowerment in the close cultural situations like current target population. Research suggested e-learning as a tool of change exploring in terms of empowerment. At a later stage, research adopted the hypotheses which stated that there is no change in empowerment level of students after using e-learning in their group work, focusing on the target population of Oman. Analysis of the results showed the rejection of this claim and acceptance of claim that there is significant affect on affect and cognitive empowerment level of students with the use of e-learning tools. These results are meant to be a contribution to the idea that states that students' personality can grow, and they can overcome their problems by applying suitable technological tools like e-learning in their educational activities.

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