Peer Interaction in Social Media for Improvement of EAP and Problem Solving Skills

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ABSTRACT

The main aim of this study is to investigate the usefulness of peer-interaction/intervention within the framework of group dynamics on line in the improvement of the subjects’ EAP and their problem solving skills in undergraduate courses. A social media tool named ‘Learning Feedback System (LFS)’ was used to offer the course through a blended approach. The students were given a task set on computer programming and asked to support each other for solving problems related to their course topic with no teacher intervention. The frequency of authentic language, academic words and total number of words used in the first and second postings of 79 students was analyzed. The results revealed that the majority of the students participated actively in the task, and the interactions helped solve each others’ problems and improve their content knowledge. A sample of 10 students was interviewed for their experience of getting involved in the peer group activities for problem solving, improvement of content knowledge and EAP. The students’ perceptions related to the benefits of peer interaction in the social media environment were highly positive.

Keywords: EAP (English for Academic Purposes), L1 (First Language/Mother Tongue), L2 (Second Language), ELL (English Language Learner), OER (Online Educational Research), LFS (Learning Feedback System), Content Knowledge, Social Media, Peer Interaction/Intervention.

1. INTRODUCTION

Social media is a young area of learning in the world. Previous research (Wilson, 2013; Ashley, 2014; Wayne, Cheryl, & Melissa 2014) shows that educational institutions have begun to reflect critically on its use because the social media based platforms can transform teaching and learning into more competitive and relevant. The use of several social media for example, Face book, Twitter, Foursquare etc. have been used in teaching and learning in the recent years in few developed countries to utilize students’ motivation for interaction to ensure greater academic success. In the USA, 80 percent of faculty use social media technologies in their courses (Moran et al., 2011). Consequently, these technologies are becoming common features in college and university level education (Wong, 2012).

Islam, M. Islam & Hoque (2014) found that extensive and improper use of social media is the reasons of poor academic performance. They also identified that the students remain busy with the social media during their personal study hours in an unsupervised environment. Studies (Mandviwalla, Schuff, Chacko, & Miller, 2013; Alon, & Herath, 2014) show that Social media offers lot of benefits and hence these technologies can be used effectively in a supervised environment in the classroom. Universities in Bangladesh have been using social media technology for over 10 years now providing extra support to the learners in a blended approach. Since the students are acquainted with the system (LFS), this study aimed to investigate a course offered by the CSE Department to discern whether peer group interaction occurs for solving problems and to what extent it influenced their level of English for Academic Purpose (EAP) and content knowledge. It has been a great concern for all concerned that most of our university entrants’ possess poor level of English skills. Their skills in academic English are even worse. Conversely, our students are not quite familiar with the benefits of peer-interaction/intervention and so, are reluctant to participate in this kind of tasks involving peer-support, peer-checking, peer-teaching using group dynamics. This study focused on those concepts by giving a simple programming task to the students following face to face lessons on the relevant topic.

2. LITERATURE REVIEW

E-learning has different forms in practice. Despite distance education universities, a huge number of traditional universities in the world have distance education mode of courses and blended learning approach. Although teaching and learning through social media technologies is somewhat different from the Learning Management System (LMS) used for E-learning but teachers and educators have been using these technologies for years in education. Some of their experiences and findings are summarized below.

A recent study conducted by Ashley (2014) commented that social media tools provide many positive uses to the students and found ways to bring it in the classroom for academic conversation. However, the author suggests using the social media during school time may result in more disruption than engagement in learning for the students. The use of such tools can enable higher education to go beyond hierarchical knowledge transmission to interactive knowledge building that establishes connections and increases the flow of learning among students (Mandviwalla, Schuff, Chacko, & Miller, 2013). This new use of social platforms changes student and faculty development, graduate placement, and teaching and learning. Since social media wasn’t created specifically for education, teachers must be aware of potential limitations before attempting to use it in their classrooms, although this kind of media may increase communication among students.
(Wayne, Cheryl, & Melissa 2014). Research has even shown that some students, especially those who are shy, are more likely to contribute to academic discussions if held in an electronic class or online class (Islam, 2003). Peruta, Ryan, & Engelsman, (2013) commented that at a time when universities are facing increasing competition, social media is seen as a new channel of communication between the institution and its constituents - a new way to present its brand to current students, prospective students, parents, faculty members, and community members.

An empirical study conducted by Alon, & Herath, (2014) revealed that social media interaction was both beneficial and positive, and it helped to promote an understanding of the importance of teamwork and the uses of technology. Toetenel (2014) examined the effect the use of the social networking tool in second language learning had on group cohesion and learner-to-learner interaction, and how these, in turn, enhanced informal language learning due to an increase in learner collaboration. The study found that the use of social media enhanced group cohesion and that learners started working in different groups once the social media site was introduced. Finally, it highlights the potential technical and administrative barriers that can impede an institution in implementing its policies so that researchers and practitioners can learn from this study. A similar study was conducted by Vasbo, Silseth, & Erstad (2014) where they gained knowledge about what it means to be a learner using social media in an educational setting. The authors present an ethnographic study of students in a multietnic community who participated in a social networking site called Space2cre8. The authors provided a detailed study of how two students made use of this social networking site as part of school activities, and it outlines two specific ways in which to be a learner using social media in school. The findings suggest that a social networking site, such as, S28 can provide different resources for different students with different learner identities, and might represent a space in which everyday knowledge and school knowledge merge to offer a hybrid space for learning. Another study conducted by Young (2013) in the USA reports that about a quarter of entering freshmen (N=200000) entering four-year colleges said they spent six or more hours a week using online social networks or watching television. At least a quarter (N=19000) have used such online networking for college-related purposes like group study, homework assignments, and obtaining information about campus activities.

The teacher’s role is changing in this paradigm as well. The teachers’ responsibility is to mediate the learning process and harness the power of social media in the classroom to do so (Powers, Averbeck, Alhussain, Warner 2012). These researchers also added, no longer are they (teachers) focused simply on pushing content or information; they are facilitating the process and helping students’ presume responsibility for their own learning. So, it appears that the role of the educator is bound to change in the 21st century. Johnson and McElroy (2012) describe the changing role of the teacher in the 21st century as the ability to present core skills and knowledge in a way that is relevant to the students and connects the curriculum to the real world. Feliz, Ricyo, & Feliz (2013) analyzed the use of Twitter in the course Social Media and Digital Learning and recommended that the students needed to be given guidance (by the teachers), insisting on re-tweets, as well as on improving horizontal interaction.

The role of the educator is also supposed to be changed in the 21st century because social media is the best way to take advantage of the personal learning networks that are being developed and to share information and ideas on how to make a difference (Wheeler 2011). Most importantly, social media and Web 2.0 tools are the enablers that bring the learning community together. However, it is defined by the learner, and provides the framework that allows students and teachers to harness the power of collaborative, personal learning. Social media networks are creating possibilities for learning that did not exist 10 years ago; how we harness these learning communities and create the classrooms of the future that meet the needs of today’s learners and society is still emerging. The impact of social media and Web 2.0 tools, and the potential of the ever evolving technology on distance education are yet to be fully understood but educators must continue to evolve the use of these collaborative tools to ensure that what is being taught is relevant to the learner and can be applied in their real world (Wheeler 2011). Despite the relative novelty of the ‘2.0’ versions of learning associated with personal learning environments and social media, aspects of the underlying conception of learning are not necessarily new (Friesen & Lowe, 2012; Menéndez Echavarría, Sánchez, & Claudia, 2013).

**Summary**

The literature review shows that the social media is a Sophisticated Avenue for engagement of students for their learning in several ways like group study, homework assignments, and obtaining information about campus activities etc. The social media tools can enable higher education to go beyond hierarchical knowledge transmission to interactive knowledge building. However, proper planning and guidance are crucial which are imposed on the teachers to meet the demand of the today’s learners. Student collaboration using such social networking tools, in turn, may contribute to second language learning but no authentic evidence has yet been found from the studies. This phenomenon is, as it were, a completely new area to explore in the perspective of Bangladesh. A lot of study presents positive outcomes and encouraging recommendations about the benefits of social media for creating communities of learners. Very few studies have given statistical data of students’ interaction and peer-intervention, as yet. The present study may be considered as a pioneering work, specially, in regard to the use of social media in teaching-learning in Bangladesh.
3. METHODOLOGY

The research was conducted in a university in Dhaka, Bangladesh. The students were familiar with the social media tool called ‘Learning Feedback System (LFS)’ and had experience of using this tool in a digital environment. The objectives of this study were to:

1. Investigate the level of interaction between students for problem solving
2. Identify the relevance of the postings to the topic/task set given by the teacher
3. Analyze the academic writing skills of the students
4. Identify the improvement of English language skills, specially, writing in both authentic and academic language.

A computer fundamental course was considered for this study. The course was taught by a teacher in a face to face class. The university has a practice to use the Learning Feedback System (LFS) to provide students an extra support for broader understanding of the topic. To comply with the university policy the students registered for the computer fundamental course were instructed to use the LFS as desired by the course teacher. The teacher used power point presentations in the face to face lessons as per planning. The objective of the topic taught was to enhance students’ knowledge of programming. On completion of the required number of face to face lessons, the students were given a set of tasks in the blog of LFS and they were instructed to post a message in response to the task and write their problems that is, what they could not understand. The students were also asked to respond to their fellow students and give solutions to their problems. The students were given two weeks time to complete their group discussion involving peer-interaction. The course teacher did not intervene or support the student for solving their problems.

This study focused on three sections of the course. Section A, B and C comprised 28, 23, and 28 students respectively. There were few female students in each section. All textual message postings of the students were collected in both soft and hard copy forms. Frequency of the postings of each of the total 79 students were counted and there pattern of posting was analyzed. All postings were read carefully to analyze academic writing skills of the students. Total number of words and the content words in the first and the second postings were counted. The first posting was the statement of the problem that the students faced to solve the task and the second or the third, (and the fourth in some cases,) postings were a response to a particular student or the whole group to solve individual problems or to answer specific questions.

The quantitative analyses of the total number of words and content words of each posting were done for each of the subjects in all of the three sections (A, B & C) separately, and graphs were produced using Excel. Small sample of 10 students were interviewed to know their perceptions of peer group interactions in social media.

FINDINGS

Frequency of posting

The data of the subjects’ postings in the Learning Feedback System shows that few (Table 1) students in each section posted only one message to share their problems in understanding the programming task. Most of the students in each section posted more than one message, that is, they stated their problems in the first posting and helped others in understanding the task by posting second and third messages. The frequency of message posting of the students is presented in table 1.

<table>
<thead>
<tr>
<th>Section</th>
<th>No of students</th>
<th>No of 1st posting</th>
<th>No of 2nd posting</th>
<th>No of 3rd plus 4th posting</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>28</td>
<td>28</td>
<td>22</td>
<td>11+4</td>
<td>65</td>
</tr>
<tr>
<td>B</td>
<td>23</td>
<td>23</td>
<td>20</td>
<td>5+0</td>
<td>48</td>
</tr>
<tr>
<td>C</td>
<td>28</td>
<td>28</td>
<td>24</td>
<td>1+0</td>
<td>53</td>
</tr>
<tr>
<td>Total</td>
<td>79</td>
<td>79</td>
<td>66</td>
<td>21</td>
<td>166</td>
</tr>
</tbody>
</table>

Section A, B and C posted a total of 166 messages. Of these messages 52% were posted for solving each others’ problems. In doing so, students applied their knowledge and skills in programming. Students belong to section A posted more messages than the other two sections. In addition to 22 second posting 11 students of section A posted a third massage and four of them posted a fourth massage for assisting a particular student for understanding the solution to the task set. This section was more interactive than the other two sections. Pattern of posting of section B and C is similar. Third attempt of those two groups was sporadic. None of them has a fourth posting. The data shows that out of 79 students, only 13 students were not able to respond to their fellow students for solving problems. However, they received help from the others.

Problem solving ability

This section presents the data of the statement of the problems related to the task set and the responses corresponding to the problems. The total number of words of the first and second
posting made by the students belong to section A is shown in figure 1.

Figure 1. Total number of words in first and second posting of 22 students of section A

22 Students of section A came up with a second posting to meet the queries and assist for solving problems of their fellow students. Figure 1 indicates that the second posting was longer than the first posting of the students except a very few. The posting were basically related to computer programming, indicates certain level of content knowledge and problem solving capacity of the students. Examples of interactions are given below.

Transcript of first posting of students no 7 of section A:

1. Why-2 will not appear in the output screen?
2. What is the correct program?

Transcript of second posting of student no 9 of section A, who replied to student no 7:

First ans: -2 will not appear in the output screen because a student add three pair’s of number & all time output screen shows which pair of number shows ‘yes’ -2 never shows cause -2 shows ‘no’.

Transcript of second posting of student no 10 who also replied to students no 7:

1. A student wants to add THREE pairs of numbers shown in the DATA statements using the program above. Write the output that should appear in the box on the right.
2. To check the program line-by-line a table with all the variables and conditions in the program needs to be prepared.

In the table below, add the variables and conditions that you would need to check in each line

3. As the program is executed, write the value of the variables and the output from the conditions for each line in the trace table

Transcript of second posting of student no 11 who replied to students no 7 for more feedback:

What is the correct problem?

Ans: in the given program the incorrect line is 30. If we remove this line from the program and add that line in line 50, then it will be correct and give us the right output. So, the correct program is Page 6

In the above example of student’s interaction, problems of student 7 were addressed by the three students in various ways to make him understand the task. The responses of the students were straightforward and relevant to the problems of student no 7 which may indicate that they have problem solving ability. Without knowledge of programming they could not answer to the questions asked by student no 7.

Among 23 students of section B, 19 students posted a second message in response to their peers. These second postings were relevant to the question asked by the group members. The graph of the total words of the first and second postings is given in figure 2.

Figure 2. Total words of the first and the second posting of 19 students of section B

The pattern of total words in the first and second posting of section B is similar to that in section A. The postings of a few
numbers contained around 10 words and others posted longer messages. An example of student interaction of section B is given below.

**Transcript of first posting of students no 1 of section B:**

**Problem 1:** What is the mean by $M_1<>-1$?

**Problem 2:** For what output screens 13 add?

**Transcript of second posting of student no 7 of section B, who replied to student no 1:**

**Problem 1:** What is the mean by $M_1<>-1$?

1st answer…. It is a while and wend programming its means input m1 never been equal input -1..

**Problem 2:** For what output screen 13 add?

2nd answer… friend in this programme screen output m3=13 add only for input m1+m2(5+8)...

In the above interactions, the responses of student 7 were relevant to the questions asked by the students 1. Student 7 confidently guided his/her fellow students for understanding the teacher’s tasks.

Out of 28 members of section C 23 posted messages for responding to their peers. Word count of most of the second postings was substantial compared to their first posting (figure 3).

Despite long responses, some students of section C gave explanation of their problems related to the task set. An example of student interaction of this section is given below.

**First posting of students 13 of section C:**

1. I do understand trace table program but when I input data 5, 8 and I have no output in this program. I know that the right program output13. But I do not understand where I have write 13 in trace table program.

2. In the part of screen output of the answer I did not write. In this program I have some output is 23,32,-2 but I do the right program and I have some output 13,23,32. I did not know what should write in the screen output.

**Second posting of student 12 of section C:**

1. some of my friends question is why we circular 2 in the trace table

**Solution:** in the given question if we see the question no 4 we can see that their instruction is two circular the incorrect output. In the other hand we know that if we give any negative date to the computer the computer will stop its work because computer never take any negative date and in the question paper. We can see that $M_1$ so here -2 is incorrect output and for this reason we circle 2

2. One of my friends question is he was confused about what he will write in the output serene? Was it the given program output or the correct program output?

**Solution:** of course we will have to give the correct program output. Because in the question no 5. We can see that we have to solve the correct program on the revise side of that question paper to give the correct output and if needed we may remember the program line. So by solving the correct program we get the correct output. For this reason we have to write the correct output to the screen output.

The above interaction of section C shows that the pattern of questions asked and the responses is somewhat different from the other two sections. In the above example, student 13 gave explanation of the task and then asked questions what he/she could not understand. Similarly, student 12 explained the task different ways and provided solutions to the questions.

The summary of results in the above two sections suggest that the level of interaction was low but it fulfilled their course requirement designed by the teacher and guided for understanding the task. The interview data of the students supported this finding. The students of the three groups
perceived that the peer group interaction was so helpful for improvement of the content knowledge.

**English for Academic Purpose (EAP)**

**Use of Language Skills**

Only three out of a total of 79 students have shown competence in their use of the rules of basic grammar and content vocabulary with good comprehension. These three students have made appropriate and effective peer intervention with good explanation and instructions for those asking for support and those quietly needing it. Examples are given below.

Student no 2 of section A responding to student no 23: “As the program is executed, write the value of the variables and the output from the conditions for each line in the trace table.”

Student no 6 of section A explaining problems to student no 26: “Suppose, you want to add first 3 two pairs, then anything else than these 3 will be wrong. It will be wrong again if it comes in wrong order. LIKE, you want output A,B,C, the Other outputs are wrong and A must be at first place, B at 2nd and C at 3rd. If B becomes 1st then this B is wrong and such C at 2nd position will be wrong. So, Out must be the same as expected other will be wrong. And it must be as expected order. Otherwise it is wrong.”

**Difficulty in understanding questions**

Except only three students, all in the three sections failed to understand the questions adequately. One of the reasons of difficulty in understanding the questions may have been a deliberate action on the part of the teacher setting the task. Their understanding of the contents words is extremely poor as well. The words like “executed”, “wend”, “appear”, “data Statement”, “program above” were mentioned by many to be explained or even translated in Bangla.

**Use of L1, Bangla**

Interestingly, in section A nine posts were made in Bangla using both Bengali and English scripts. Two participants asked for translation of the problems or solutions in Bangla, their L1, and they commented that they would understand the quiz and the content better through Bangla. The level of English in this group may be lower on an average from the other two sections. An examples of the use of L1, Bangla is “problem a amra computer k read korbo”. Here the words in bold are used in the subject’s L1. Other 3 words are in English. Another example, “takhon computer-e <>-1 check koria” which is absolutely in Bangla.

**4. DISCUSSION**

In the first instance, it appears from the design of the course that the teacher sought to involve students in problem solving through interaction and intervention by giving them a task set on computer programming. Teacher intervention was withdrawn to allow authenticity of students’ participation and ensure the use of authentic language on the part of the subjects. Hence, no intervention of the teacher was found in the social media discussion blog. The level of interaction between students for problem solving and helping each other for understanding the tasks would indicate the achievement of the course goals (Islam & Vale, 2012). The course teacher might recognize him/her as successful but he/she must be aware of the potential limitations of the students (Wayne, Cheryl, & Melissa 2014) before attempting to use them for solving the given problems and provide guidance for a common understanding. Moreover, teacher’s contribution enhances confidence level of the students.

The frequency of message posting appears satisfactory as the students were asked to state their problems and provide solutions to each others’ problems. All 79 students posted their levels of difficulties in understanding the task set. A few students of section C explained the task and then indicated their problems that they were facing. In fact, a few students, only three, showed confidence in dealing with the task set. Except a very few in each section, most students came up with explanation of the problems and solutions to them with justifications and was seen to be useful for understanding the problem. The interaction activities show that the students had access to the task set (Islam & Vale, 2012) to a considerable extent and achieved the skills of using the content knowledge at an expected level after discussion. This kind of group dynamic in asynchronous environment (Cox, & Cox, 2008) and interactive knowledge building establish active networking connections and increases the flow of learning among students (Mandviwalla, Schuff, Chacko, & Miller, 2013). Student interaction occurred in the groups had a positive impact but they had lack of social skills as the participants did not acknowledge each others’ help during interaction.

English language is used as a medium of instruction especially in higher education worldwide (Doiz, Lasagabaster & Sierra, 2013) but it is a challenge for those learners who use it as a second language (L2). Previous study (Toetenel, 2014) found that social networking tool supported learner-to-learner interaction, and in turn, enhanced informal language learning, especially, a second language, due to an increase in learner collaboration (Pasfield-Neofitou, 2012). This finding is
contradictory to the present study as majority of the students exhibited poor level of Academic Writing Skills in English while communicating their problems or giving solutions to the problems. The students had lack of skills in using rules of grammars and appropriate vocabulary. Indeed, they did not pay attention to their writing skill and attempted to communicate some times in their L1. Bangla (mother language), on several occasions by few students. However, the use of L1 (mother tongue of the ELLs) can be very helpful in the beginning of SLA (Second-Language Acquisition (Krashen and Brown, 2007).

5. CONCLUSION

In the context of a developing country and involving a group of students with Non-English speaking background, this study is so important for broader understanding of overall learning behavior of the students as well as their level of English language skills. The study shows that the course teacher had insufficient strategies for involving students in problem-solving activities in an online setting like social media tool named Learning Feedback System. There are some positive impacts in understanding the topic/tasks through peer group interactions and it enhanced students’ level of content knowledge and problem solving skills. Teacher intervention is an effective strategy in a teaching-learning situation. The planned withdrawal of teacher interventions in this study might have influenced the outcome and learner achievement. So, recommendation may be made for any replication of such peer intervention program in future as teacher interventions, even in the form of a simple encouraging comment and acknowledgement do boost up learner engagement and hence, increased achievement. Content analysis of the available data, students’ postings in this case, which has not been done elaborately in this study, is an important technique to interpret impact of peer interaction in such studies. Inclusion of detailed content analysis is recommended for further studies to ensure more credible findings.

REFERENCES


