A Comparison on Using Social Media in A Professional Experience Course

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Abstract

This study compares two social media platforms, blogs and Facebook, used in supporting experiential learning in a final year university course. Measures of social network analysis were calculated based on students’ commenting activities. The results confirm that each of the platforms has its own strengths and it is desirable for new tools to combine the advantages of both platforms in supporting experiential learning.

I. Introduction

Social Media tools such as blogs and Facebook have been recognized as effective in facilitating teaching and learning in higher education (Maloney, 2007). A blog is an online journal of its creator who could be an individual person, a group of persons sharing common interests, or an organization. Blogs gained popularity in supporting teaching and learning in higher education for its affordance of interactivity between creator and readers (Williams, 2004). In education, blogs are typically used as a platform to engage students in “collaborative activity, knowledge sharing, reflection and debate” (p.233, Williams, 2004).

Facebook is undoubtedly one of the most popular social networking sites (SNS) in the world. Although not being developed for the purpose of supporting teaching and learning, Facebook’s strengths in connecting people and spreading information among connected people match the needs of social and collaborative learning where smooth distribution of information and sense of community are essential (Kreijns, Kirschner & Jochems, 2003).

Both blogs and Facebook have been used in educational settings. In comparing the affordance of the two platforms in supporting learning, Lee, Chan, Leung and Chu (2013) conducted content analysis of students’ posts in blogs and Facebook and interviewed the students for their perceptions of using the two platforms. Notwithstanding the significance of such studies in evidencing the usefulness of social media platforms in education, the conventional methods have some limitations. Interviews can reveal in-depth information on why and how students used and felt about the platforms, but perceptions are subjective and may be influenced by inaccurate memory or unconscious biases. Content analysis often requires multiple rounds of data examination and thus is hard to scale up for a large amount of data. On the other hand, it is now possible to automatically calculate meaningful measures of student interactions from their posting activities on social media platforms. This study aims to use automated methods to
analyze student usage of social media platforms. Specifically, it applies the method of social network analysis to comparing the effects of using blogs and Facebook in a Professional Experience course at the undergraduate level. The following of this paper will describe the context of the course studied, the analysis and results. Based on the results, we draw conclusions and envision future work.

II. The Course Studied

Professional Experience is a core component in a Bachelor Program in Information Management (IM). It requires students to work as full-time interns for at least 6 weeks in various organizations in the IM sector. A major assessment of this course is a reflective journal written by each student during the course. For the purpose of journalizing, one of the two student groups considered in this study used YouBlog in 2008 for journalizing (n=16) while the other group used Facebook (private group function) in 2011 (n=21). Specifically, the students were required to post their self-reflective journals to the platforms every one or two days during their internship. Besides, students were required to comment on others’ posts one to two times a week. We collected all the students’ posts and comments on the two social media platforms during the corresponding periods of the course. By analyzing the patterns of students’ posting and commenting activities, this study compares students’ behaviors in using the two social media tools in this course focusing on experiential learning.

III. Social Network Analysis

Social network analysis (SNA) is a prominent method which identifies patterns of relationships among actors (e.g., people, organizations, artifacts) in certain contexts (Scott, 2000). SNA has been used in educational research related to collaborative learning and knowledge building (Scardamalia et al., 2012), due to its capacity in measuring interactions among participating students. In this study, based on the commenting and “response-to” relationships in the collected data, four SNA measures were calculated to compare the characteristics of social networks formed among students in each platform.

Network fragmentation
Network fragmentation measures the degree to which a network is fragmented. It is often defined as the proportion of all pairs of actors in the network that cannot reach one another, either directly or indirectly. In the context collaborative learning, less fragmented networks indicate more students have interactions with one another, and thus are usually desirable.

Average distance
In a network, the distance between two actors is the length of the shortest path between them. Average distance of a network is defined as the average length of all shortest paths between actors in the network that are connected directly or indirectly. This measure can tell how fast information can be exchanged in a network. Networks with lower average distances can be more efficient in information exchange, and thus are often preferred in the context of collaborative learning. However, this measure needs to be examined in conjunction with network fragmentation because only connected actors are considered in calculating average distance. It is possible that a network with low average distance is in fact highly fragmented.
**Average degree**

Degree refers to how many direct connections an actor has to other actors in a network. Average degree is the average number of direct connections each actor in the network has. This measure reflects how dense a network is. The higher the average degree is, the more direct connections the actors have. In the context of learning, a higher average degree indicates more students are directly interacting with one another.

**Centrality**

Centrality measures the extent to which an individual actor is in the center of a network. The aggregation of centrality across all actors in a network is network centralization which measures the extent to which the centrality measures vary among actors in the network. Depending on different aspects of network topology, there are three major measures of network centralization. *Degree centralization* measures the extent to which a small number of actors have a lot of direct connections while others have few. *Betweenness centralization* capture the extent to which a few actors are in the position of linking other non-connected actors. *Closeness centralization* measures the degree to which only a few actors are very close to others in term of length of paths (Wasserman, 1994).

### IV. Analysis and Results

From YouBlog, 787 messages (445 original posts and 343 comments) were collected from the blogs of 16 students. From Facebook 592 messages (183 original posts, 323 comments and 86 “likes”) were collected from the private groups of 21 students. It is noteworthy that among the Facebook messages, 83 comments and 46 “likes” were from the three teachers who facilitated the reflection and discussion process. In addition, there were 9 “likes” sent from students to the teachers. As this study focuses on interactions among students, messages from or to teachers were eliminated from social network analysis, resulting in 454 messages (183 original posts, 240 comments and 31 “likes”). The YouBlog data does not contain messages from or to instructors, either because teachers did not take part in the commenting activities or because data related to teachers were not collected.

Commenting networks were built based on the comments each of which was sent from a student (source) to another (destination). Therefore, the networks are directed: all connections are from the source student to the destination student. Table 1 shows the network measures calculated using social network analysis tools, Netlytic (Gruzd, 2011) and UCINet (Borgatti et al., 2002).

<table>
<thead>
<tr>
<th></th>
<th>YouBlog (n=16)</th>
<th>Facebook (n=21)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network fragmentation</td>
<td>0.324</td>
<td>0.179</td>
</tr>
<tr>
<td>Average distance</td>
<td>1.802</td>
<td>2.014</td>
</tr>
<tr>
<td>Average degree</td>
<td>4.350</td>
<td>4.619</td>
</tr>
<tr>
<td>Degree centralization (in)</td>
<td>20.20%</td>
<td>4.85%</td>
</tr>
<tr>
<td>Degree centralization (out)</td>
<td>13.74%</td>
<td>14.18%</td>
</tr>
<tr>
<td>Betweenness centralization</td>
<td>17.24%</td>
<td>22.96%</td>
</tr>
<tr>
<td>Closeness centralization (in)</td>
<td>76.11%</td>
<td>31.16%</td>
</tr>
<tr>
<td>Closeness centralization (out)</td>
<td>53.33%</td>
<td>77.85%</td>
</tr>
</tbody>
</table>

| Table 1. Social network analytic measures on the two student groups |
Comparison of the measures reveals the difference between the two networks. The commenting network on YouBlog is more fragmented with about 32% of the student pairs disconnected. The students using Facebook were more connected with comments or “likes” to one another. The students using YouBlog had slightly shorter average distance, which may be due to the fact that it was a smaller network (with 16 people vs. 21 in Facebook). Moreover, the commenting network on Facebook had higher average degree, indicating the students tended to connect with more other students through giving or receiving comments or “likes”.

The comparison on centralization measures also yields interesting observations. Although the out-degree centralization values of the two networks were comparable, the in-degree centralization values differed substantially. The higher value (YouBlog) indicates more variability in degree centrality among the students. In other words, in the YouBlog network some students received comments from many other students (e.g., Dora and Chloe in Figure 1 who had high in-degree) where some others seldom or never being commented (e.g., Gill, Silk, Wayne, Michael and Elaine in Figure 1 who had low in-degree). In contrast, the in-degrees of students in the Facebook network are more evenly distributed. As shown in Figure 2, only Benson has zero in-degree while many others had two or more in-degree. This shows that comments were more evenly distributed among students in the Facebook group.

Figure 1. Commenting network of the YouBlog group (names shown are all pseudo names)
Betweenness centrality measures the power of a student has in terms of bridging other disconnected students in the network. Higher betweenness centralization values indicate higher variability of betweenness centrality among the students. Neither of the two networks had high betweenness centralization which means most students did not have obvious advantages of being the necessary intermediary in connecting other students. It was more of the case for the YouBlog network as it has lower betweenness centralization than the Facebook network.

Closeness centrality measures the distance of a student to all others in the network. The YouBlog and Facebook networks had opposite trends in terms of closeness centralization. For in-centralization, students in the Facebook network were more equal whereas those using YouTube varied a lot. From Figure 1, it can be seen that some students had zero in-closeness as they did not receive any comment at all, but some others had high in-closeness as they received comments directly from quite a few others who also received direct comments from a number of others (e.g., Dora and Bella). The situation turned over for out-centralization. The Facebook network has high variability. Some students had zero out-closeness as they did not comment on others (Benson and Lilian in Figure 2) whereas the out-closeness values of some others were very high. For instance, Yvette and Joshua commented directly on many others (e.g., Daisy) who also commented on a number of others. These observations indicate that on YouBlog there were a small number of students who received comments from many others whereas on Facebook there were a small number of students who commented on many others.
4. Conclusion and Future Work

The results show that much more original messages were posted on YouBlogs than on Facebook (445 vs. 183 in total, and 27.8 vs. 8.7 per student). It seems that YouBlog was a better platform to encourage students to reflect and journalize more often. On the other hand, the commenting network on Facebook was more connected. Perhaps because Facebook provides the “like” function which is easy and convenient, Facebook seems more effective in facilitating communications and interactions among students. On both platforms, most students actively commented to others’ posts (out-degree centralization) while on Facebook most students received comments from similar numbers of other students. Both platforms turned out to be “democratic” as there was not much difference among the students power in connecting other students in each of the networks. Closeness centralization values indicate that high variability in the distance among students receiving comments on YouBlogs and those sending comments on Facebook.

This study provides empirical evidence that the two social media platforms can be effectively used in facilitating deep reflections and collaborative learning. Both YouBlogs and Facebook have their own advantages and it is therefore suggested that future social media tools should combine the strengths of blogs (organization of content) and Facebook (collaborative features). The findings are not only consistent with students’ perceptions collected from post-course interviews (Chan et al., 2013), but also provide analytic evidences. Future work will include analysis of the roles individual students played in interacting with other students (e.g., centre, peripheral or isolated), which will be helpful for instructors in monitoring and assessing student collaborative learning in similar contexts.

References:


