The Design of Online Learning Community Using Web 2.0

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ABSTRACT
Information and communication technology has been increasingly applied in education and driven educational institutes to improve their teaching and learning strategies in order to fit the new learning style of students. Constructivist learning theory, as one of the attempts to improve student learning outcomes, focuses on learning environment and learning activity. Constructivist learning theory emphasizes that students need to be active and gain experiences from meaningful learning environment. Recently, the emerging of Web 2.0 eras has shown that the online user behavior has changed. Now, the online users are likely to share their knowledge and gain acknowledgement. This paper, therefore, studied the key characteristics of Web 2.0 and constructivist learning theory. The number of 329 websites was examined. The results showed that Web 2.0 learning community consists of three main components which are Content Sharing, Communication, and Socialization.

Keywords
Constructivist Learning, Education 2.0, Learning Community, Web 2.0

1) INTRODUCTION
The rise of the use of the information and communication technology in education has driven educational institutes to improve the teaching and learning method, resulting in many kinds of new learning strategies such as e-learning, m-learning, and blended learning.

Recently, the emerging of Web 2.0 eras shows that the online user behavior including student learning style has changed. In Web 2.0 society, online users are more freedom, independent, and self-direct learning.

The development of Web 2.0 sites, such as Facebook, Myspace, Wiki, and other social networking sites (SNS), rapidly increase the number of virtual communities, in which online users may use to communicate, participate, and share content (Fu, Liu, & Wang, 2008). Web 2.0 makes a revolution in the way that users are not only read the content from the web pages, but also interact with the websites and other users. The web usage has been changed from viewing content to sharing content, from reading web to reading/writing web.

The revolution of Web 2.0 has also made the impact on education. It is found that Web 2.0 plays an important role in any academic or pedagogical activity (Tijerino, et al., 2006). However, the study of how to apply Web 2.0 concept to the education is needed (Ullrich, et al., 2008).

This paper, therefore, studied Web 2.0 characteristics and learning theories, and then proposed the Web 2.0 learning community framework. The result of the study may be used to apply for the future development of online educational framework in order to fit to the new student learning behavior and encourage lifelong learning.

2) CONSTRUCTIVIST LEARNING THEORY
Recently, the educational learning paradigm has shifted from behaviorist learning theory to constructivist learning theory. The constructivist learning theory is a combination of many ideas (Tynjala, 1999) that focus on activities and environment. It is believed that
the learning environment, that gives students meaningful experiences and makes students active, can help students develop new knowledge. As a result, in constructivist learning, the design of the learning environment is more important than the sequence of instructions (Jonassen, 1994; Wangpipatwong, 2007). Students are the center of learning and the teachers change their role from teaching students to facilitating students to learn. Practically, students compare and share their ideas with others, collaborate and participate in learning environment in order to develop new knowledge (Wangpipatwong, 2007). Many studies reported that students in constructivist learning environment have better learning outcomes than students in traditional learning environment (Moreno, et al., 2006; Parker & Becker, 2003; Zhang, et al., 2004; Zhang, et al., 2005).

3) WEB 2.0

The term of "Web 2.0" was first introduced in 2004 by O’Reilly and MediaLive International (O’Reilly, 2005). Recently, Web 2.0 has become the mechanism for the next generation of Web (Gibson, 2007) and led to the development and evolution of online communities.

Web 2.0 does not suggest any update to technical specifications of how to develop web application. Instead, it is described as a set of principles and practices that considers web as a platform for the online community, and harnesses collective intelligence (O’Reilly, 2005). In addition, Web 2.0 provides the information of web development styles, method of interaction, and sources of content (Lewis, 2006). In Web 2.0 environment, contents may be user-generated contents (Singh, et al., 2008) or may be gathered from other websites in real time and assembled in a single web page (Lewis, 2006).

4) WEB 2.0 CHARACTERISTICS

O’Reilly (2005) describes many key characteristics of Web 2.0 such as the web should be considered as platform. The web platform considers other webs as source of services which are integrated into a single website. That is, Web 2.0 may be a business platform for corporate people or may be a communication platform for marketing team. Another key characteristic of Web 2.0 is the information. O’Reilly (2005) pointed out that Web 2.0 is an information-driven application. Source of information is the key to success or failure of Web 2.0. In addition, user-generated content is the most important information in Web 2.0. The more contribution of the user, the more success of Web 2.0 will be. Moreover, Web 2.0 application is no longer a software artifact controlled by the developer but a service community that is gradually changed by the users.

According to Mason & Rennie (2007), Web 2.0 is considered as social networking sites consisting of three main characteristics. Firstly, Web 2.0 should contain user profiles such as person’s name, information about person, and photograph. Besides, most profiles have unique URLs that users can directly access. Secondly, Web 2.0 should be traversable. That is, users in the community have the ability to explore their friend’s profiles. Finally, users can leave public comments for others.

Stephens & Collins (2007) explained that Web 2.0 should support user conversation and participation. They believed that conversation and participation can create the sense of community and belonging. Information and ideas should be created by users and be shared freely. In addition, rewarding or acknowledgement should be given to users who provide meaningful knowledge.

Ullrich, et al. (2008) suggested that Web 2.0 should enable and facilitate the active users. The value of Web 2.0 increases when more people are using it. Information in Web 2.0 is normally provided by the users. Web 2.0 is considered as a service that can be assembled to a single platform. Finally, Web 2.0 is no longer a version-based software packages, but are constantly refined and improved by users. The changes of services occur gradually by the community.
Singh, et al. (2008) concluded that Web 2.0 changed the way of services to user-centric model. The focus of Web 2.0 developer should be on the users. Web 2.0 fosters user participation by building the community and collecting knowledge and intelligence.

5) THE WEB 2.0 LEARNING COMMUNITY FRAMEWORK

Since the behavior of users in cyberspace has changed, most successful online communities are based on the data and information generated by users. The more users participate in the community, the more success the community will be. Therefore, the definition of online education should be expanded and developed to fit the new generation of users. In other words, the design concept of education should be reconsidered and come up with more relevant ideas. Students now have a freedom mind and like to be free. They want to be different and like to gain acknowledgment. Education is no longer about learning in classroom but about the real-life activities. Moreover, education needs something new and capable of attracting interest from students. As a result, Web 2.0 concept is really suitable for new generation of students.

Because learning environment is an essential component in constructivist learning theory, building Web 2.0 learning community, that creates such a learning environment, is an important issue. The Web 2.0 learning community framework establishes the foundation on which learning facilities are designed. A well designed learning community has a benefit of sharing knowledge. Based on the behavior of online users in Web 2.0 and the concept of constructivist learning theory, the Web 2.0 learning community should encourage students to learn with pleasure, eager to participate, and gain experiences. In addition, the learning activities and elements of interest should be provided in order to attract student interest and urge to share knowledge (Jang, Kye, & Kang, 2006). The conceptual design of Web 2.0 learning community framework is illustrated in Figure 1. There are three components consisted of content sharing, communication, and socialization.

Figure 1: The Conceptual Model

With this conceptual model, Web 2.0 learning community is an educational platform for students and teachers. It contains services that support the learning process (O’Reilly, 2005; Ullrich, et al., 2008). The model focuses on students and tries to collect information from them (Singh, et al., 2008).

The Web 2.0 learning community is driven by information and data generated from users (O’Reilly, 2005). Knowledge is not only from teachers but come from many sources including student generated content and other websites as depicted in Figure 2.

Figure 2: Multiple Sources of Content

In order to make students active, students are required to have their own profile and content (Mason & Rennie, 2007). Conversation and participation is encouraged through chat room and webboard (Stephens & Collins, 2007). Students can exchange their profile and information among their friends or their teachers (Ullrich, et al., 2008). In addition, they can make a comment for other information as well (Mason & Rennie, 2007).
The key factor to make web 2.0 successful is that users should be regularly attracted to the website in order to contribute and share knowledge (Mason & Rennie, 2007). Therefore, incentive and rewarding should be considered. The Web 2.0 learning community provides incentive and rewarding for students by giving them an acknowledgement (Stephens & Collins, 2007). The most read content or the most voted content will be displayed in the list along with the writer’s profile in order to give writer the credit.

6) WEB 2.0 SURVEY

To confirm the conceptual model and have better understanding of Web 2.0, Web 2.0 sites were explored in this study. The websites were gathered by using the top four Web 2.0 directories searched by Google and 329 websites were analyzed. The name and location of Web 2.0 directories is listed in Table 1.

Table 1: Web 2.0 Directories

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>GO2WEB20.NET</td>
<td><a href="http://www.go2web20.net/">http://www.go2web20.net/</a></td>
</tr>
<tr>
<td>FeedMyApp</td>
<td><a href="http://www.feedmyapp.com/">http://www.feedmyapp.com/</a></td>
</tr>
<tr>
<td>Ziipa</td>
<td><a href="http://www.ziipa.com/">http://www.ziipa.com/</a></td>
</tr>
<tr>
<td>LISTIO</td>
<td><a href="http://www.listio.com/">http://www.listio.com/</a></td>
</tr>
</tbody>
</table>

According to the survey, the result shows that the most popular content sharing tools is Blog and Wiki which users can use to share their information and knowledge. The percentage of Blog and Wiki is 68.4. Furthermore, other sharing contents are user profile, multimedia files and news from RSS which are 25.2, 24.9, and 23.7 percent, respectively. Additionally, search engine tool is also provided in the content sharing section for users to search for the needed information. The percentage of websites which provide search engine tool is 59.9.

In communication section, we found that asynchronous communication is more popular than synchronous communication. The percentage of asynchronous communication is 59.9 whereas the percentage of synchronous communication is only 6.1. Comment tool for the sharing content is also provided in most Web 2.0 sites. The percentage of comment tool is 65.7.

For socialization section, the result shows that vote and ranking for content is the most popular tool which is 39.2 percent. Event and contest is the second most popular which is only 14 percent. The detail of Web 2.0 features is listed in Table 2.

Table 2: The Number and Percentage for Web 2.0 features

<table>
<thead>
<tr>
<th>Category details</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Content Sharing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharing Information (Blog, Wiki)</td>
<td>225</td>
<td>68.4</td>
</tr>
<tr>
<td>Search engine</td>
<td>197</td>
<td>59.9</td>
</tr>
<tr>
<td>Sharing Profile</td>
<td>83</td>
<td>25.2</td>
</tr>
<tr>
<td>Sharing Multimedia File</td>
<td>82</td>
<td>24.9</td>
</tr>
<tr>
<td>RSS</td>
<td>78</td>
<td>23.7</td>
</tr>
<tr>
<td>Others (Slides, News, etc.)</td>
<td>61</td>
<td>18.5</td>
</tr>
<tr>
<td>2. Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td>216</td>
<td>65.7</td>
</tr>
<tr>
<td>Webboard</td>
<td>197</td>
<td>59.9</td>
</tr>
<tr>
<td>Chat Room/ IM</td>
<td>20</td>
<td>6.1</td>
</tr>
<tr>
<td>3. Socialization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voting and Ranking</td>
<td>129</td>
<td>39.2</td>
</tr>
<tr>
<td>Event and Contest</td>
<td>46</td>
<td>14.0</td>
</tr>
<tr>
<td>Others (Acknowledgement, Poll, etc.)</td>
<td>24</td>
<td>7.3</td>
</tr>
</tbody>
</table>

7) DISCUSSION

In traditional education, teachers give students too many information and they are exhausted. In Web 2.0 education, it is believed that students are more active and likely to exchange ideas with satisfaction. Since Web 2.0 changes the way information are created, shared, and used, the Web 2.0 learning community is intended to be a learning source that gives students real-life experiences. The Web 2.0 learning community is the rich network connecting students together and intends to gather information that are contributed by students. With this strategy, students are more active in the learning environment which results to the improvement of knowledge development. However, the key success of Web 2.0 learning community is the motivation. Although Web 2.0 learning community is driven by the information from students, teachers still have an important role to motivate students. In addition, teachers play a facilitator role to encourage students to join and share information in the community and support them to develop knowledge. Finally, some learning activities may be added to the
community to activate the movement in the community.

In this study, the Web 2.0 learning community has three important components which are content sharing, communication, and socialization. Content sharing section is the part that integrated information and knowledge from many sources mainly by students. Another possible source is other websites using RSS technology. It is interesting that the most popular content is the information found in Blog or Wiki instead of multimedia content. This result may imply that the online users are more interested in useful information than other kinds of content such as multimedia files. Therefore, this finding confirms that Web 2.0 concept should be used in the design of the online learning community.

Another interesting finding is that the comment is the most popular activity in the communication section which means users tend to participate and comment for other user contents. This result may conclude that users enjoy sharing their experiences with other. In addition, the result shows that users like to communicate with others asynchronously. This finding may imply that users communicate and learn at their convenient time. This behavior explains why traditional face-to-face learning is no longer enough for new generation of students. Additional learning strategies, such as online learning community, should be added to the traditional learning method in order to improve student learning outcomes.

Finally, the results show that the most popular tool used in socialization section is voting and ranking. Because the key to success of the community is the information generated from users. The more contents users generate, the more success of the community will be. Therefore, voting and ranking gives online users a credit and makes them acknowledge by other users.

8) CONCLUSION

The behavior of students has now changed and the education needs to come up with new learning strategies. Constructivist learning theory, as an endeavor to improve student learning outcome, is found to be similar to Web 2.0 characteristics. Constructivist learning theory focuses on learning environment and making students active by encouraging students to collaborate and share information. Similarly, Web 2.0 shows that online users currently like to share information and participate in socialized community. Therefore, this paper studied the web 2.0 characteristics and proposed the online learning community based on Web 2.0. The online learning community consists of three components which are content sharing, communication and socialization. Finally, this paper examined the number of Web 2.0 sites and pointed out the key important issues in order to confirm the design of online learning community.

The results of this study showed that the most popular sharing content is information and knowledge in Blog or Wiki. Users like to communicate with others asynchronously. Voting and ranking the user content is the tool that may be used to encourage users to share knowledge.

9) REFERENCES


