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Using a social bookmarking tool for group project work online

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Abstract: This research investigated secondary school students' perceptions of a social bookmarking tool for information organization, search and management. Participants include Form 1 and Form 2 (n=347) students from a Hong Kong secondary school, working on group projects over a four-month period. Students used Delicious to manage information sources for their group projects. Using a mixed-methods approach, a questionnaire and focus-group interviews examined students' perceptions on the use of Delicious upon completion of group projects. Preliminary findings indicate positive perceptions on the usefulness of Delicious for information organization, search and management. Further analysis examined the usefulness of social bookmarking for students.

1. Introduction

As the educational concept is changing from instructivism to constructivism and e-resources are replacing the traditional formats of materials, students may assume that they can find all the information they need from the Internet in the environment of Web 2.0. Hence, librarians, teachers and students should rethink ways of saving and sharing information for group project work.

Usually, people can make use of the “add to favorite” function provided by an Internet browser, or save webpages directly to the disk on their own computers. Meanwhile, due to the development of Web 2.0 technologies, social bookmarking tools, which allow users to preserve useful links as bookmarks on web servers, have become an alternative choice.

This research aims to examine users’ perceptions on the usefulness of social bookmarking. Specifically, this study investigated users’ perceptions on the usefulness of social bookmarking for information organization, search, as well as group information management. This research focuses on the Delicious users who are Form 1 and Form 2 students. The findings of this research have potential implications on the development of social bookmarking services for teenage users. In addition, our findings also contribute to further understanding of how social bookmarking may contribute to academic activities at the secondary school level.

2. Literature Review

Social bookmarking is the practice of saving bookmarks to a public website and “tagging” them with keywords (Educause Learning Initiative, 2005).

There are various types of Web 2.0 applications, such as blogs (Chu, Chan, & Tiwari, in press) and wikis (Chu, 2008). Social bookmarking tools are one type of such Web 2.0 applications that allow users to build up collections of web resources, save them as bookmarks, classify and organize them by using metadata tags, and share both the bookmarks and tags with others (McLoughlin & Lee, 2007).

Social bookmarking has a variety of advantages for general users (Hotho et al, 2006; Gordon-Murnane, 2006; Menchen, 2005; Millen, 2005). First of all, users can save their bookmarks on a web server instead of on their local hard disks, and thus the bookmarks can be accessed from any computer (Menchen, 2005; Gordon-Murnane, 2006). Secondly, one user can set up collections of bookmarks and share the bookmarks with other users (Menchen, 2005; Millen, 2005). Thirdly, users can create tags to classify and organize their bookmarks (Gordon-Murnane, 2006; Millen, 2005). In addition, users can retrieve all the bookmarks that have the same tag in one step (Gordon-Murnane, 2006). Moreover, social bookmarking has been suggested to be an economical application where information resources are sharable and reusable for group information management (Grudin, 2006).

Previous studies have explored the functions of tags (Golder & Huberman, 2006), the differences between user-contributed data and structured data (Gruber, 2007) and the problem in shared conceptualizations in social bookmarking and its solution (Jaschke et al., 2008).

Other studies have also examined social bookmarking in the academic context and found it helpful in finding users' own bookmarks, searching relevant bookmarks, sharing bookmarks with friends and colleagues, and managing group information (Chu, Gorman, & Du, 2010).

However, it seems that very few studies have been done to examine the usefulness of social bookmarking tools at the secondary school level.

3. Research Methods

3.1 Research objectives

Based on the gap identified in the literature, this study focused on the following research objectives:

1. To evaluate if Delicious was perceived as a useful tool to organize information.
2. To evaluate if Delicious was perceived as a useful tool to search information.
3. To evaluate if Delicious was perceived as a useful tool to manage information in group projects.
4. To compare Form 1 and Form 2 students' perceptions on using Delicious.

3.2 Participants, data collection and analysis

One hundred and sixty-six Form 1 students and one hundred and eighty-one Form 2 students from a Hong Kong secondary school participated in this research.

According to their school year, students were first divided into two subpopulations: Form 1 and Form 2; next, each of the two subpopulations was divided into five classes; and finally, each class was divided into eight groups.

A group of around six students worked together on a project of their choice. Students were asked to use Delicious to bookmark web sources they found useful for their group project.

A mixed method is implemented in this research to generate and analyze both numerical and non-numerical data. A questionnaire about perceptions on the usefulness of Delicious was used to survey all participating students. In order to ensure that this questionnaire would be understandable by all the participants, a pilot test was conducted to two university students and one secondary school teacher. Face-to-face interviews were also conducted as the follow-up step. Chain-referral sampling was used to select interviewees: the teacher responsible for this program recommended four groups of students from Form 1 and Form 2, respectively.

The quantitative data collected by questionnaires was analyzed by SPSS 16.0. A 5-point Likert scale was applied. Descriptive statistics were used to measure central tendency. Since the normality of the data was questionable, the nonparametric test Mann-Whitney U Test was adopted to examine the differences in the responses of the two forms. Statistical significance was set at $p < .05$. Responses to open-ended questions and interviews were summarized qualitatively.

4. Results

4.1 Social bookmarking for organizing information

Table 1 shows the results of students' perceptions on the usefulness of Delicious for organizing information. Some participants did not choose any option, and these answers were excluded from analysis; therefore, the sample sizes varied in different questions. Both Form 1 and Form 2 students generally held slightly negative views to the usefulness of the functions of creating titles, forming groups and creating tags for organizing information, and there were no significant differences between users of these two forms.

Table 1 Students' perceptions on the usefulness of Delicious for organizing information

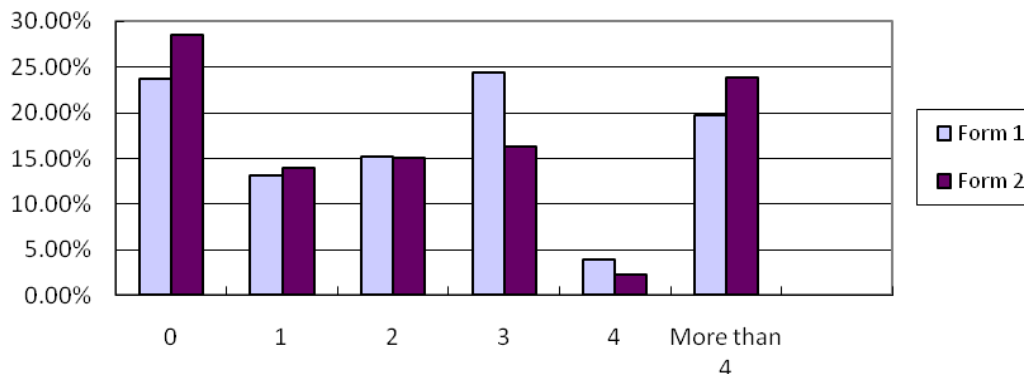
Methods	Form 1	Form 2	Total	Mann-Whitney U Test
	Mean (SD) Median	Mean (SD) Median	Mean (SD) Median	<i>p</i> -value
It is useful to create a title for a bookmark.	2.94 (0.957) ^a 3	2.83 (0.932) ^d 3	2.89 (0.945) ^g 3	0.356
It is useful to form a group for sharing bookmarks regarding our project.	2.96 (0.958) ^b 3	2.93 (0.930) ^e 3	2.94 (0.942) ^h 3	0.896
It is useful to create tags for bookmarks in Delicious.	3.02 (1.033) ^c 3	2.96 (0.967) ^f 3	2.99 (0.998) ⁱ 3	0.719

Notes: * $p < .05$. ^a $n = 163$, ^b $n = 163$, ^c $n = 163$, ^d $n = 177$, ^e $n = 178$, ^f $n = 178$, ^g $n = 340$, ^h $n = 341$, ⁱ $n = 341$.

Participants gave ratings based on a 5 - point Likert scale where 1 = "Strongly disagree", and 5 = "Strongly agree".

With respect to their means, both Form 1 (Mean 2.94) and Form 2 students (Mean 2.83) tended to be slightly negative on the usefulness of creating a title for a bookmark. For the usefulness of forming a group and creating tags, Form 1 students' perceptions (Mean 2.96; 3.02) were more positive than that of Form 2 students' (Mean 2.93; 2.96) although such difference was not significant. In addition, between those two groups and among these three questions, the only question that was held slightly positive views to was the usefulness of creating tags by Form 1 students (Mean 3.02).

Figure 1 Number of tags created by students



Notes: Form 1 students n = 152; Form 2 students n = 172

For the number of tags created by each user, as shown in Figure 1, “four tags” accounts for the smallest part in both Form 1 users and Form 2 users (3.95%, 2.33%). Two extremes occurred in both Form 1 and Form 2: the students created either more than four tags (19.74% in Form 1, 23.84% in Form 2) or no tags at all (23.68% in Form 1, 28.49% in Form 2). Another extreme occurred in Form 1 students: 24.34% Form 1 students created three tags for a bookmark, accounting for the largest percentage in that form.

4.2 Social bookmarking for searching information

Table 2 shows the students’ perceptions on the usefulness of Delicious for searching information. There were no significant differences between users of the two forms. Both Form 1 and Form 2 students held more positive views towards the usefulness of tags for searching information from their own bookmarks (Mean 3.09; 3.09) and their group members’ bookmarks (Mean 2.99; 3.04) than from other Delicious users’ bookmarks (Mean 2.98; 3.02). Perceptions on the effectiveness of Delicious in helping them find information

through other Delicious members' bookmarks were below the neutral level from both Form 1 and Form 2 students (Mean 2.83; 2.88).

Table 2 Students' perceptions on the usefulness of Delicious for searching information

Methods	Form 1	Form2	Total	Mann-Whitney U Test
	Mean (SD) Median	Mean (SD) Median	Mean (SD) Median	<i>p</i> -value
It is useful to use tags to find my own bookmarks.	3.09 (1.012) ^a 3	3.09 (0.931) ^e 3	3.09 (0.969) ⁱ 3	0.851
It is useful to use tags in finding relevant bookmarks created by other Delicious users.	2.98 (0.902) ^b 3	3.02 (0.904) ^f 3	3.00 (0.902) ^j 3	0.577
It is useful to use tags in sharing bookmarks with group members.	2.99 (0.984) ^c 3	3.04 (0.935) ^g 3	3.02 (0.958) ^k 3	0.530
Delicious is effective in helping me to find useful information through other Delicious members' bookmarks.	2.83 (0.978) ^d 3	2.88 (0.892) ^h 3	2.85 (0.933) ^l 3	0.558

Notes: * statistically significant at $p < .05$. ^a $n = 162$, ^b $n = 163$, ^c $n = 163$, ^d $n = 161$, ^e $n = 177$, ^f $n = 177$, ^g $n = 178$, ^h $n = 175$, ⁱ $n = 339$, ^j $n = 340$, ^k $n = 341$, ^l $n = 336$. Participants gave ratings based on a 5 - point Likert scale where 1 = "Strongly disagree", and 5 = "Strongly agree".

4.3 Social bookmarking for group information management

Table 3 shows students' perceptions on the usefulness of Delicious for group information management. For the usefulness of managing information in a group, both Form 1 and Form 2 students generally held neutral views with no significant differences between these two user categories. Compared with Form 2 students whose central tendency of this

question was slightly above the neutral level (Mean 3.01), Form 1 students held a little bit negative attitude (Mean 2.93).

Table 3 Students' perceptions on the usefulness of Delicious for group information management

Methods	Form 1	Form2	Total	Mann-Whitney U Test
	Mean (SD) Median	Mean (SD) Median	Mean (SD) Median	<i>p</i> -value
Delicious is useful for managing information in a group.	2.89 (0.926) ^a 3	3.01 (0.839) ^c 3	2.95 (0.882) ^e 3	0.147
It is easy to share bookmarks with other group members.	3.21 (1.024) ^b 3	3.28 (0.904) ^d 3	3.24 (0.963) ^f 3	0.334

Notes: * $p < .05$. ^a $n = 161$, ^b $n = 162$, ^c $n = 173$, ^d $n = 173$, ^e $n = 334$, ^f $n = 335$. Participants gave ratings based on a 5 - point Likert scale where 1 = "Strongly disagree", and 5 = "Strongly agree".

For the question about the ease of sharing bookmarks with other group members, both Form 1 and Form 2 students provided generally positive answers (Mean 3.21; 3.28).

Interviewees from S1FGroup2¹ agreed that it was an easy task to share bookmarks among group members by using Delicious due to its user-friendly interface. However, they found that there was not a convenient way to do so, as a complex procedure was necessary for registering a Delicious account. S2EGroup3² and S1BGroup8³ explained that online platforms for collaboration, such as Google Sites, could also be a place for sharing

¹ S1FGroup2 refers to Form 1 Class F (a fake name) Group 2.

² S2EGroup2 refers to Form 2 Class E (a fake name) Group 2.

³ S1BGroup8 refers to Form 1 Class B (a fake name) Group 8.

information, and it was not necessary to register another account for the sole purpose of sharing bookmarks.

4.4 Overall perceptions of social bookmarking

Table 4 shows students' overall perceptions on the usefulness of Delicious. As can be seen, significant difference in ratings was not found between Form 1 and Form 2 according to the Mann-Whitney U test. In general, neither Form 1 nor Form 2 students likes using Delicious (Mean 2.59; 2.56). Most of the interviewees did not recommend Delicious as a tool for information organization, search and group information management. Among all the items measuring students' overall perceptions on the usefulness of Delicious, sharing bookmarks with group members was ranked the highest by both Form 1 and Form 2 students (Mean 3.11; 3.19). Meanwhile, students from both Form 1 and Form 2 agreed more on the feature of accessing bookmarks from any computer (Mean 3.02; 3.01) than sharing bookmarks with all Delicious users (Mean 2.89; 2.91).

Table 4 Students' overall perceptions on the usefulness of Delicious

Methods	Form 1	Form2	Total	Mann-Whitney U Test
	Mean (SD) Median	Mean (SD) Median	Mean (SD) Median	<i>p</i> -value
I like using Delicious.	2.59 (1.066) ^a 3	2.56 (0.940) ^e 3	2.57 (1.001) ⁱ 3	0.842
I like the feature that I can access my bookmarks from any computer.	3.02 (1.046) ^b 3	3.01 (0.950) ^f 3	3.01 (0.995) ^j 3	0.992
I like the feature that I can share	3.11 (1.016) ^c	3.19 (1.008) ^g	3.15 (1.011) ^k	0.222

bookmarks with my project group members.	3	3	3	
I like the feature that I can share bookmarks with all Delicious users.	2.89 (1.025) ^d 3	2.91 (0.940) ^h 3	2.90 (0.980) ^l 3	0.664

Notes: * $p < .05$. ^a $n = 160$, ^b $n = 161$, ^c $n = 161$, ^d $n = 161$, ^e $n = 174$, ^f $n = 175$, ^g $n = 175$, ^h $n = 175$, ⁱ $n = 334$, ^j $n = 336$, ^k $n = 336$, ^l $n = 336$. Participants gave ratings based on a 5 - point Likert scale where 1 = “Strongly disagree”, and 5 = “Strongly agree”.

5. Discussion

With a social bookmarking tool, users can set up groups for information sharing, and the titles and tags created by users in the same group are meaningful among group members and thus useful for information organization (Millen et al, 2007). Also, bookmark collections on social bookmarking websites can be publicly visible, and thus users can search and make use of the bookmarks saved by themselves, their group members and other users (Rader and Wash, 2008). Since the above functions might have the potential to benefit users at the secondary school level for academic purposes, this study was intended to examine students’ perceptions on the usefulness of Delicious for organizing, searching information and group information management.

The overall findings of this study show that users who are secondary school students generally have negative perceptions on Delicious (Mean 2.57). The reasons may be the unattractive features provided by Delicious as well as the ability of secondary school students to use Delicious.

Because creating titles and tags as well as forming groups can be achieved through many other tools, such as the more comprehensive application Google Sites, Delicious is not the

unique choice for students with regard to organizing information. Moreover, students are used to the “bookmarks” feature supported by the web browser, and may not want to make changes. Finally, students need to shift between their Delicious accounts and the accounts of the online platform for constructing group projects, which increases the inconvenience of sharing information.

Regarding the usefulness of Delicious for searching information, students prefer to use tags to search their own or their group members’ bookmarks rather than to search information from other Delicious users. On one hand, tags are meaningful to the one who creates them and those who are in the same group with the creator, while less understandable for the people who are not in the same group with the tag creator. For students, bookmarks found by tags created from other Delicious users may be less meaningful and unreliable. Thus, students consider tags as notes to remind themselves about the content of the resources rather than as the keywords to use in searching for new information. On the other hand, young users from secondary schools may not notice the importance of searching information from other Delicious users. Instead, the students simply need a location to save and share information within their own groups.

For the usefulness of Delicious for group information management, alternative tools like emails or online platforms for collaboration (e.g., Google Sites) can also achieve the same purposes, and thus students do not agree on the necessity of using Delicious.

6. Conclusion

To sum up, students at the secondary school level do not perceive social bookmarking as a useful tool for group project work.

Most of the perception central tendencies of Delicious features for organizing, searching information and group information management are around neutral. Students prefer to use other tools that are more familiar to them or more comprehensive to achieve the same purposes. As one of the applications of Web 2.0 technologies, Delicious enables searching information from other users, which is one of its most important features. In this study, however, most of the participated secondary school students did not notice this advantage, and regarded social bookmarking as a place for saving bookmarks and sharing within their own groups only.

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