

Is social software really a “killer app” in the education of net generation students? Findings from a case study

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Problem statement

Social software (SSW – the main examples of which are Blogs, Wikis, social networking, bookmarking/tagging sites) is a disruptive technology in higher education, because it potentially changes the instructional paradigm from a formal, structured curriculum-based model to a more open, informal, borderless learning model.

Broadly defined, SSW connects communities based on common interests, practices, etc. overcoming traditional obstacles of space, time, and technological barriers (Boyd, 2006; Coates, 2005; Shirky, 2003). Another key attribute set of SSW is scalability and open architecture, resulting in “network effects” (Siemens, 2005) – which means the more people use these tools and services, the more valuable and richer they become.

Several authors argue that SSW is a potential game changer in higher education because of their open nature (Fiedler *et al.*, 2004; Leslie and Landon, 2008; Kitsantas and Dabbagh, 2011) which leads to self-empowerment of users (Bryant, 2007). While a systematic review of the literature on net generation students and their use of technology (Bennett *et al.*, 2007) underscored this paradigm shift – they characterized the debate on the need for fundamental changes in education as a sign of “academic moral panic”, there are actually very few empirical studies on this topic (Bennett *et al.*, 2007; Conole *et al.*, 2008; Gunter, 2007; Kennedy *et al.*, 2006; DeSchryver *et al.*, 2009; Cheong *et al.*, 2010; Ram *et al.*, 2011). The aim of this case study was to contribute to filling this gap.

The specific context of the study

The study university is a laptop-based university in Southern Ontario. The researcher has worked for the university in a position responsible for the management of information technology in the library. The use of technology in teaching and learning represents a strategic focus of the university, and it is viewed as a true differentiator in both cultures. Because of the university recruiting efforts, participating students were assumed to be technology oriented. Thus, the generalizability of study findings may be limited to such contexts.

Research questions

The scope of the main research question was to describe impact of SSW on the information literacy skills and learning of a sample of net generation students at one laptop university located in Southern Ontario. The following sub questions were proposed:

- RQ1. What is the nature and extent of SSW use among the participating students?
- RQ2. What are the participating students’ perceptions and attitudes about using SSW for learning?
- RQ3. To what extent do these students utilize SSW for academic tasks in the context of learning information literacy?
- RQ3a. To what extent do they leverage the distinguishing features of these tools?
- RQ3b. What are the barriers (if any) to using SSW in this context?
- RQ4. How does the use of SSW impact these students’ scores on the information literacy test?

RQ5. How do the perceptions of the students who used SSW compare with those students who did not use SSW?

RQ6. Is there a relationship between the students’ perceptions and attitudes (RQ2) toward SSW and academic learning outcomes – as measured by the information literacy test and survey questionnaire (RQ4 and RQ5).

The research design

The research model can be characterized as an exploratory, descriptive, quantitative case study. The focus of the study was on the impact of SSW on students’ information literacy skills. A quasi-experimental method was used to compare the effects of using SSW in information literacy instruction with an approach relying on traditional educational technologies such learning management systems (LMS). In addition, participants’ perceptions and attitudes regarding SSW were collected using online surveys.

The course and participants

The participants were enrolled in a social science writing and information literacy course. This course is typically taken in the first year of studies at the university. Initially, 67 students were enrolled in Section 1 of the class and 142 students in Section 2. For the study, 37 students consented to participate from Section 1 and 78 from Section 2. However, only 24 students in Section 1 and 56 students in Section 2 completed the study, resulting in a participation rate of 36 and 38 per cent, respectively. The blended participation rate was 38 per cent.

Section 1 students were subjected to the SSW treatment and Section 2 students formed the control group. The different

instructional approaches are outlined in Table I.

Demographics: 47 students were 18 years old (freshmen) and 33 students were older (average age 20.39 SD 1.713). Mean age was 19 in both groups with higher variability in the control group (SD 1.383 vs 1.711). The ratio of females to males is 4:1 in the treatment group (T-Group); more evenly balanced (54 vs 46 per cent) in the control group (C-Group).

Procedures and instrument

The study consisted of two phases: a formal instructional phase and a self-study phase. The process which is shown in Figure 1 followed these steps:

- (1) Pre-phase 1 instruction: pre-test surveys were conducted to assess students' perceptions and attitudes regarding SSW. Standardized information literacy pre-test[1] was taken to determine baseline skills.
- (2) Phase 1: active instruction phase.
- (3) Phase 2: student self-study phase.
- (4) Post-phase 2: post-surveys conducted to assess changes in students' perceptions regarding SSW, and the nature of SSW use during the study. Standardized information literacy post-test[1] was taken to determine changes in skills.

Study findings

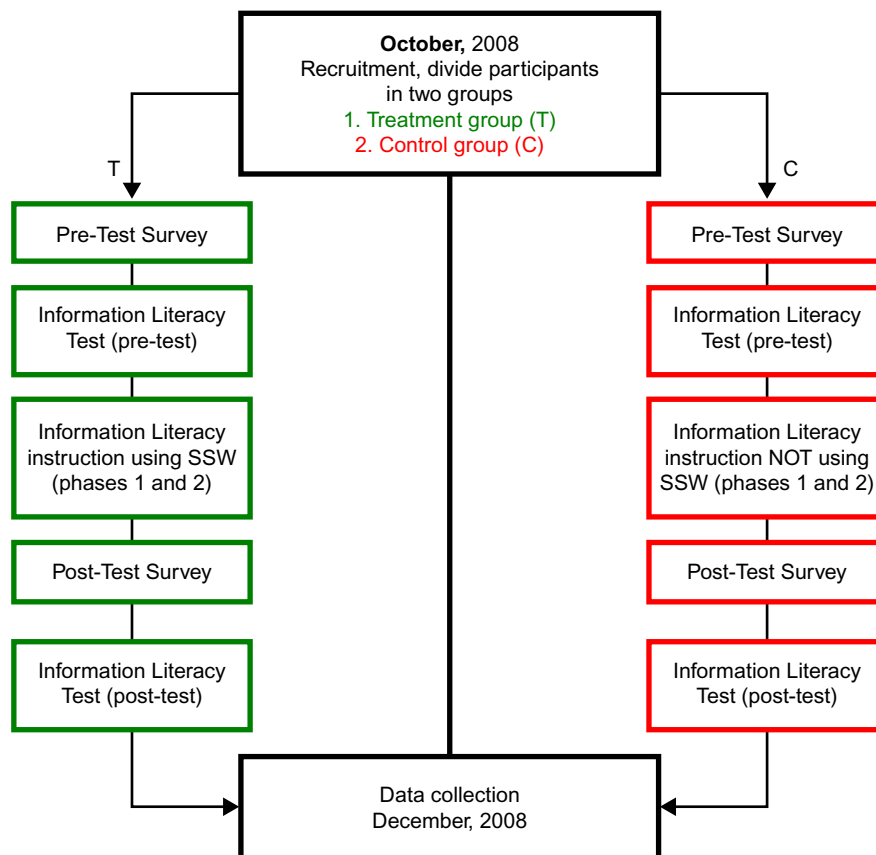
Out of the six research questions the following salient points are summarized:

- (1) Among the study participants, students reported only a moderate amount of SSW use, with the exception of social networking technologies, whose adoption was nearly ubiquitous.
- (2) The dominant use of SSW fell outside of the academic sphere, although a moderate amount of academic use was also reported.
- (3) The majority of students regarded SSW as a set of primarily personal, consumer tools rather than learning tools. However, students more familiar with SSW tools recognized the academic utility of these tools (pre-test). Figure 2 below shows the distribution of the various SSW tool users and the students' perceptions of these tools.

Table I.
Instructional methods used in the course

Section 1 (treatment group)	Section 2 (control group)
In-class lectures and labs	In-class lectures and labs
Online resources accessed using SSW (class Wiki and class Blog)	Online resources accessed via the learning management system (WebCT Vista)
Online activities via SSW (class Wiki, Blog – additionally, unmediated use of social networking/Facebook and social bookmarking tools/delicious)	Online activities via the learning management system (WebCT Vista)

Figure 1. *Flowchart of research process*

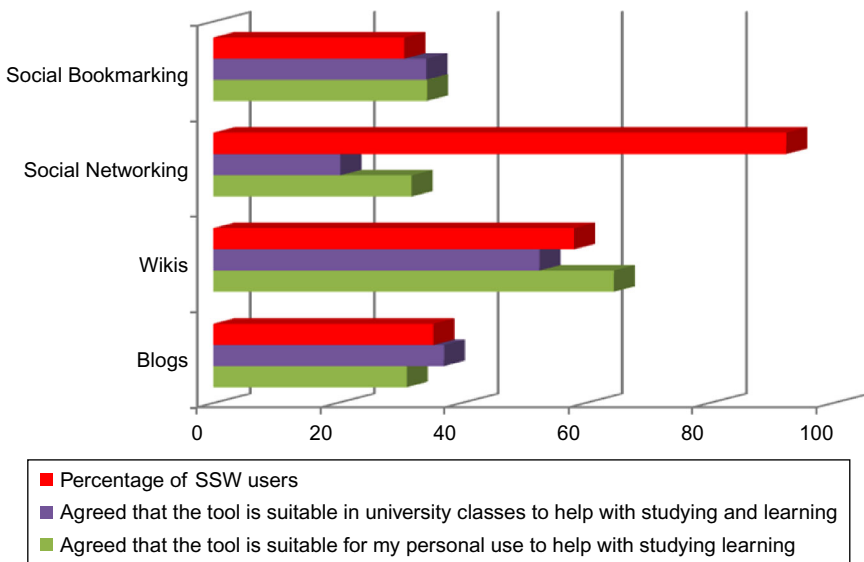


This familiarity has played a major role in students' eventual adoption of these tools in the course (this was underscored by the fact that a number of the students in the control group also reported SSW use during the study). Among the main barriers to SSW adoption were the lack of clear mandate and enforcement within the course context, as well as the nebulous non-hierarchical nature of SSW (when compared with LMS).

- (4) No difference was found between the treatment and the control groups in

either the pre-test ILT scores or the post-test ILT scores. The different instructional treatment in the two groups did not result in different academic performance as measured by the ILT scores. However, SSW use itself was positively correlated with academic performance. When all SSW users were compared with non-users regardless of class sections, they achieved 6.3 percentage point higher scores on the post-ILT test, which is statistically significant ($t = 3.048$, $p = 0.004$). The pre-test scores for

Figure 2. Comparison of usage frequency and views regarding SSW tools



- these two groups of students were no different (Table II).
- (5) Academic out performance was correlated with factors such as skills with SSW, students' engagement and maturity (Table III). Data bore some indication that male students could benefit from using SSW more than female students.
 - (6) No difference was found between perceptions of learning

- between SSW users and non-users, although SSW users appeared to be more satisfied with the level of technology used in the course.
- (7) Among SSW users, positive pre-existing attitudes toward the utility of SSW to support learning correlated with these students' favourable views of their learning (post-test).

Table II. Mean ILT scores by use of SSW (t-test)

Test	SSW use	n	Mean score	SD
Pre-test	No	22	63.18	8.83
	Yes	58	64.34	12.09
Post-test	No	22	69.91*	7.99
	Yes	58	76.26*	9.14

Note: Significance at: * $p < 0.01$

Table III. Significant factors correlated with performance: all SSW users versus non-users

Factors and variables	Used SSW	n	Mean	SD
Studying for ILT after classes ended ^a	No	22	2.27 ^{*,b}	1.08
	Yes	58	2.81 [*]	0.805
Frequency-Facebook ^{c,d}	No	22	2.27 ^{***}	1.64
	Yes	57	1.18 ^{***}	0.38
Skill-Facebook	No	22	3.91 ^{**}	1.51
	Yes	56	4.68 ^{**}	0.76
Age	No	22	18.36 ^{**}	0.66
	Yes	58	19.22 ^{**}	1.8

Notes: Significant at: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; ^afour-point frequency scale – higher number indicates higher frequency; ^bPearson $\chi^2 = 8.25$, $df = 3$, $p = 0.041$; ^cfive-point frequency scale – lower number indicates higher frequency; ^dPearson $\chi^2 = 23.13$, $df = 4$, $p = 0.000$

Conclusion and future recommendations

The study concluded that further research is needed to understand the divergence on the uptake of various social software tools amongst net generation students. While the utility of different SSW tools in formal instruction seems appealing to educators, but this is not yet evidenced convincingly in students' behaviour (beyond social networking systems).

Institutions using SSW in instruction should pay special attention to students with less-developed technology skills. While generally this is true for any technology enhanced teaching and learning environment, in the case of SSW both the negative and positive effects could have a larger impact on this population.

Integrating social software in mainstream education has a great potential: by unshackling the "silos"-based approach of traditional instructional models (Leslie and Landon, 2008), it offers the promise to enrich the student educational experience and perhaps even of better learning outcomes. At the same time, SSW in its original forms were never really meant to be instructional technologies, and adapting them as such would have to answer legitimate needs in today's pedagogical practices. This can be fraught with many challenges. For example, assessment techniques and issues of control are very important cornerstones of the accepted educational paradigm – these are factors that are notoriously difficult to adapt and measure with these emerging technologies. These challenges are reflected in recent research (Kitsantas and Dabbagh, 2011; DeSchryver *et al.*, 2009; Cheong *et al.*, 2010; Ram *et al.*, 2011). Success will likely be borne out only by concerted efforts by the research community, and by large-scale institutional investments.

NOTE

1. The test instrument was the ILT by James Madison University. More information at: www.jmu.edu/assessment/wm_library/ILT.pdf

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