

# Exploring my university students' online learning activities in Wikis

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Students' responses in an online learning environment serve as a powerful means to communicate feedback to instructors' instructional design and facilitation of student learning. This study tapped on the metadata in wikis (supported by Google Sites) as online classroom data to investigate 72 university students' online learning activities performed for their module weekly. The students were engaged most frequently in commenting and editing, but least frequently in updating and recovering files. Trends of students' responses towards online learning over four semesters provided an insight for instructors to reflect on the appropriateness of their design and types of learning activities for their students.

**Keywords:** Classroom data, online learning, online teaching, Wikis

## Introduction

Both student learning and instructor teaching have great influence in the 'happenings' of online learning environment. Typically, the students receive instruction, perform tasks and spend significant amount of time learning materials provided by their instructors. Instead of collecting student feedback at the end of each course, a spontaneously available online data could be generated to capture the on-going learning process to help instructors make decisions in their facilitation of students' learning activities. As both instructor and students are not online at the same time, students' on-going weekly responses to the online teaching would help instructor understand the students' participation and tasks performed. It is argued that the development of instructors' knowledge and skills in using systemic and classroom data will help informing and generating improved students' learning outcomes (Renshaw, Baroutsis, van Kraayenoord, Goos, & Dole, 2013). More specifically, the analysis of students' learning activities can provide immense feedback on instructors' task designs, facilitation and support for students leading to their overall teaching effectiveness.

Online learning supported by social media such as Google sites, blogs and wikis is a common practice (Miller, 2014). Instructors use online learning as a pedagogical tool to reap teaching benefits such as structuring group collaboration and cooperative learning, promoting active student engagement in learning, using both synchronous and asynchronous activities, having round-the-clock access to the learning activities, and preparing discussion posts that invite insightful responses (Mayadas, Bourne, & Bacsich, 2009). Wikis is a social book marking tool that can be used for students to remain connected to the content being studied in both inside and outside of classroom settings (Oxford & Oxford, 2009). Students' participation in online learning environments is as important to the instructors as they are to the students. It is only through students' participation of online activities that instructors can gather insightful information about the students' reaction towards the content, and how they can then better teach the content in order to achieve improved student learning outcomes (e.g. cognitively and affectively). Using the classroom data that is information gathered in the online learning environment can potentially lead to accounting any possible trend or describing the learning phenomenon that takes place (Renshaw et al., 2013). This paper seeks to demonstrate how an inquiry-based analysis of classroom data that focuses on the students' online learning activities in Wikis could be used to inform and improve the instructors' online teaching. Two research questions are: What activities do students engage in most frequently and least frequently in Wikis? How do students respond to types of online learning activities in Wikis?

## Methodology

## Participants

A total of 72 undergraduate students (Male: 14 ~ 19%, Female: 58 ~ 81%) enrolled over four semesters (starting from Jan 2013, Jan 2014, Aug 2013, Aug 2014) in a Singapore university participated in a module. Description of the students' year and programme of study are shown in Table 1.

**Table 1: Year and programme of study (by semester in percentage)**

	Jan 2013	Jan 2014	Aug 2013	Aug 2014
(A) Years				
1	10.0%	21.0%	30.0%	25.0%
2	15.0%	27.0%	40.0%	42.0%
3	35.0%	26.0%	25.0%	33.0%
4	40.0%	26.0%	5.0%	0.0%
(B) Ranks				
1 (high)	BUS (27%) SOC (27%)	PSY (39%)	PSY (55%)	PSY (46%)
2 (low)	PSY (20%)	CHIN (11%) ELH (11%)	LMS (10%)	ELH (15%)
Legend:	BUS – Business CHIN – Chinese	SOC – Sociology ELH – English	PSY – Psychology LMS – Linguistics & Multilingual Studies	

Note Ranks refer to the enrolment of students by their programme of study

## Procedure

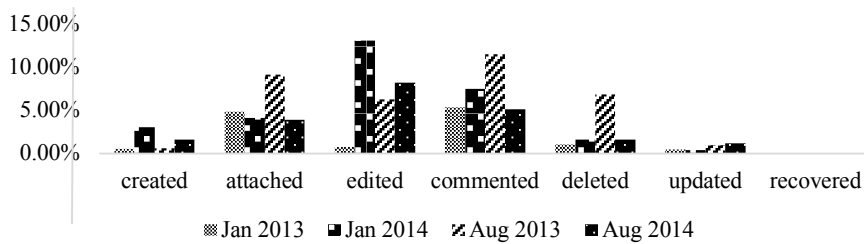
Throughout the 16-week module, students were required to participate in a series of activities on wikis supported by Google Sites, a web application. Apart from accessing the course materials, other activities such as personalising a page for self-introduction, creating reflection logs (created); submitting work (attached); making revision to an existing page or subpage (edited); peer editing, making resource contribution (commented); removing work uploaded onto the page (deleted); making revision to an attachment uploaded for sharing or submission (updated); retrieving a previously deleted document (recovered).

All learning activities were conducted in the online environment both within and outside of class time, and were tracked in the Google Sites metadata under the 'Recent site activity' page. Data analysis of students' online activities was conducted in three parts:

- Frequencies: Includes a) the most and least frequently performed activities, i.e. created, attached, edited, commented, deleted, updated, recovered, and b) the most and the least active week within a semester,
- Trend analysis: Includes a) the frequencies of overall activities, and b) the frequencies of each activity type in each semester, and
- Correlation analysis: Includes the correlation between types of activity performed by students

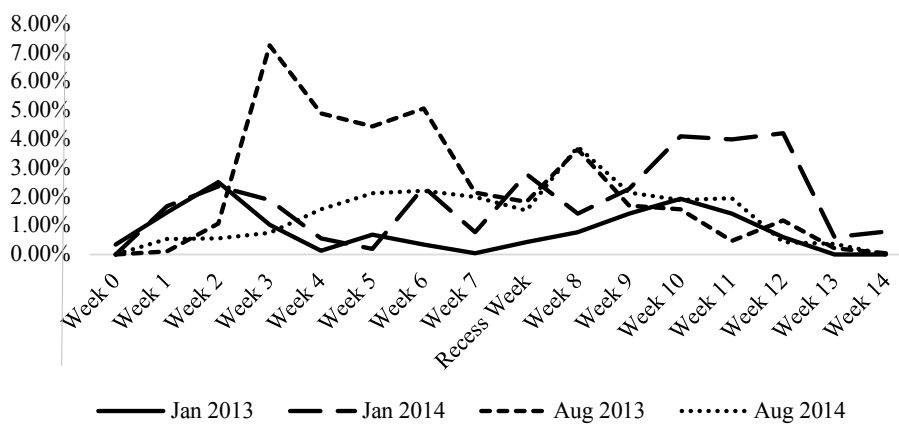
## Results

In terms of frequencies, Figure 1 shows that "commented" and "edited" are the most frequently engaged activities (at 29.51% and 28.40% respectively) while "updated" and "recovered" are the least frequently engaged activities (at 2.92% and 0.17% respectively) across the four semesters. Figure 1 also shows students' learning in terms of knowledge building, sharing and critique. Students were mostly engaged in commenting and editing. However, the students were found to be least engaged in updating and recovering their documents. This shows the students' careful attitude when sharing information online since they were least likely to make revisions to their attachments (i.e. updated and recovered) that they had uploaded on the online platform; they would do self-correction if they were to make mistakes or when their information on the Wiki was no longer relevant. The frequency of student activities could also indicate the cohorts' preferences towards specific activities. For example, two cohorts of students (Jan 2013 and Aug 2013) were more inclined towards commenting while two other cohorts (Jan 2014 and Aug 2014) were more inclined towards editing in the online learning activities.



**Figure 1: Student Activities in Wikis supported by Google Sites for 4 semesters**

Figure 2 shows the students' online actions over 16 weeks (inclusive of week 0, recess week and week 14) for all four semesters. Students were most active in wikis during week 3 (10.9%), followed by weeks 6, 8 and 10 (at 9.9%, 9.5% and 9.5% respectively) across all four semesters.



**Figure 2: Overall Student Activity in Wikis supported by Google Sites for 4 semesters**

Figure 2 shows that for both Jan 2013 and Jan 2014 cohorts, students were relatively less active on wikis during weeks 4, 5 and 7 (at 0.12%, 0.69%, and 0.02% respectively for Jan 2013; at 0.55%, 0.19%, and 0.76% respectively for Jan 2014). The smaller percentage in the overall activity for these weeks could be attributed to public holidays (Chinese Lunar New Year) and students' prelude to recess week (a week-long break) respectively, as students are either in festive mood and/ or more relaxed, and are hence less active in their online participation on the Wiki. However, the higher percentage in the overall activity for week 6, recess week and week 8 (at 0.33%, 0.43%, and 0.76% respectively for Jan 2013; at 2.33%, 2.78%, and 1.40% respectively for Jan 2014 ) could suggest that students' work productivity tend to increase during the break (from week 7 to recess week - from 0.02% to 0.43% respectively for Jan 2013; from 0.76% to 2.78% respectively for Jan 2014) and/ or after break (from week 7 and week 8 – from 0.02% to 0.76% respectively for Jan 2013; from 0.76% to 1.40% respectively for Jan 2014). In particular, the rise in percentage in the overall activity from week 7 to recess week could be due to students' using the recess week (refers to school break) to consolidate and catch up on work that was conducted in the first half of the semester. It is of interest to note that the slight decrease in the percentage of overall activity from recess week to week 8 for the cohort of Jan 2014. This could indicate that students from that particular cohort might have possibly coped or caught up with their work successfully. In sum, the students were less likely to participate in online learning during the festive period as compared to the recess/school break. This could mean that students used the recess to catch up their school work instead of participating in any online activities in Singapore context.

Figure 2 shows the trend of student activity performed in the wiki increased steadily from 12.65% (in Jan 2013) to 35.52% (in Aug 2013), but declined at 29.04% (in Jan 2014) and at 21.66% (in Aug 2014). This trend is likely due to students enrolled in the module becoming more technology savvy as a result of their continued exposure to the online learning environment. For example, they could use

more learning features of Wiki to comment, share resources and tools for their projects. This could also be due to the university's campus wide active promotion for technology-enabled pedagogy for teaching and learning. All these could have resulted in students from the later cohorts in becoming more adventurous in exploring new web-based tools and web-based resources in designing their projects in the subsequent courses.

Correlation analysis was conducted across types of activities (refer to Table 2). The frequency of "created" is positive correlated with "attached" ( $r = .35, p < .01$ ) and "edited" ( $r = .79, p < .01$ ); the frequency of "attached" is positive correlated with "edited" ( $r = .47, p < .01$ ), "commented" ( $r = .70, p < .01$ ) "deleted" ( $r = .34, p < .01$ ), and "updated" ( $r = .26, p < .05$ ); the frequency of "edited" is positive correlated with "commented" ( $r = .39, p < .01$ ); and the frequency of "commented" is positive correlated with "deleted" ( $r = .26, p < .05$ ). The activity, "recovered" was not included in the correlation analysis due to its low frequency.

**Table 2: Correlation across different types of activities**

	Created	Attached	Edited	Commented	Deleted	Updated
Created	1	.354**	.790**	.209	-.001	-.020
Attached		1	.469**	.698**	.343**	.258**
Edited			1	.385**	.157	.083
Commented				1	.263*	.060
Deleted					1	.133
Updated						1

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

## Conclusion

This paper has shown that through using an inquiry-based approach towards interpreting metadata stored in Google Sites, instructors can analyse student online activity so as to better improve their online pedagogy. The observed classroom data has revealed students' behaviours in the online learning environment. It has shown that students in this study engaged most frequently in commenting and editing, but engaged least frequently in updating and recovering. Moreover, the student profile, the presence of school breaks, and the attitude towards online learning as reflected in the metadata do affect students' response towards online learning. Students' participation in online platforms is not just important to the learners, but to the instructors as well. Hence, it is important that instructors take advantage of the activities that students engage in most frequently, as well as the presence of school breaks, so as to improve their students' learning outcome. However, instructors should be cautioned against the use of simplistic analyses and comparisons derived from the metadata because the analysis has not taken into account the many underlying characteristics, such as profile of learners, socio-economic status or family background, which may explain the comparative performance of the students in terms of the grades obtained at the end of the module (Renshaw et al., 2013). In addition, careful attention and thoughtfulness should be exercised by instructors in scaffolding learners' learning roadmaps through an understanding of their characteristics, the availability of curriculum time (online or blended) and the design of interesting student-centred learning activities, are necessary for their pedagogy to be effective in wikis (Author).

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