Effects of integrating Web 2.0 applications in the E-Business course.

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Abstract

Learning styles of undergraduate student of today are changing rapidly because of ready access to the Internet. Students are no longer dependent on conventional textbooks to gain knowledge; therefore, traditional teaching methods must be tweaked to accommodate such changes. The E-Business course offered at Bethlehem University in Palestine during the spring 2011 semester blended Web2.0 applications such as social media and cloud computing to support the changing student learning styles, with the intent of effectively delivering the E-Business course content without requiring textbook. The course also included participation in the Google Online Marketing Challenge (GOMC) that is offered worldwide. This article evaluates innovations in terms of Web2 applications skills development of the 59 students taking this course and how skills acquisition influenced their independence in knowledge seeking. A questionnaire assessed the students' perception and was supplemented by the students' results in GOMC. Results of survey showed that 79.30% agreed that the course did help them develop confidence on their knowledge acquiring abilities. This innovation appears to be effective in motivating students to learn how to utilize new applications on their own. These results should encourage educators to employ Web2 applications relevant to the course content and evaluate their results.

Keywords: Web2.0 applications, blended learning, Web-based learning, Adwords, GOMC, social networks

Introduction

The term Web2 was introduced by O'Reilly Media Inc. in 2004. Although Web2 has several meanings, in this article it refers to those applications that run on Internet browsers from any computer or mobile device that can access the Internet. The user's data for these applications can be kept on either host's computer servers or on the user's own storage device. Most Web2 applications (Web2-Apps) facilitate online collaborative environment.

"Web2-Apps are changing the Web from an essentially ''broadcast'' environment (where a relatively small number publish material to the rest), to one in which we can all participate as publishers. Arguably Web 2.0 has created a new virtual environment in which young people live and, potentially, learn and take control of the publishing process" (Brown, 2010, p.5). Through social media applications under the Web2.0 environment, users are sharing contents with their followers and getting personal comments and different opinions. "This raises important issues about traditional learner–teacher relationships, ownership of lecture content, and of control over the dialogue in a classroom" (Brown, 2010, p.5).

In the last decade, the e-learning trend was (and still is) dependent on Course Management System Platforms. These platforms as well as WIKI management and chat rooms were used for communication and collaboration among learners, educators and course owners or served mainly as sources of the course material. This model of e-learning is nothing more than transforming traditional classroom to virtual environment as it still keeps the upper hand of the educator in gearing the learning process.

"So, hype notwithstanding, Web 2.0 tools might turn out to be a lot more popular among learners and teachers because they meet user needs" (Brown, 2010, p.6). In Web2 learners can find same content presented in different medium such as videos, animated graphics or simple textual material and it is also aggregated in different Web2.0 tools. Hence, Web 2.0 brings a new perspective to finding online information. Instead of using commercial search engines like Google and Yahoo to locate information, it is now possible to find information in more social and participatory ways (Asselin & Moayeri, 2011). No matter what the learner uses to search for information, the Web exploration strategies reflect upon and integrate diverse web search results and ideas for a deeper understanding of the given problems (Liu et al, 2010).

Cognitive learning as Cifuentes et al. (2011) point out is concerned with the acquisition of knowledge and it relates to the process of acquiring knowledge by the use of reasoning, intuition or perception. While Web 2.0 technologies interfered with deep learning they may have contributed to learners' cognitive flexibility. The cognitive flexibility emphasizes the importance of providing learners with multiple representations of content in order to increase those learners' cognitive structures. Therefore, educators have to be careful when integrating Web2-Apps in their courses because of the different skills of the students, and consider the benefit from more training in how to use Web 2.0 tools to support their own learning. Such training would decrease students' experience of cognitive overload in courses that leverage Web 2.0 while increasing their cognitive flexibility.

At Bethlehem University the typical use of Web2-Apps has been through the online Open Source Course Management Platform (Moodle) provided by the University's network. Moodle is widely used at Bethlehem University as a platform for the communication and delivery of course material between faculty and students. Moodle was utilized in the E-Business course along with the Web2-Apps in order to introduce something new to the ICT educational model models at the University.

The main reason for introducing Web2-Apps was to equip the students with new skills and allow them to experience the benefits and limitations of these applications. Another reason for introducing Web2-Apps in the E-Business course was to allow independence from the applications accessed from the University's network and to benefit from e-services provided on the World Wide Web. The skills gained from this will allow the students to be active e-agents when they become part of the local Palestinian or international workforce. The integration of Web2-Apps reflected in the assessment criteria for this course and it had 45% of the total 100% mark. The remaining 55% covered the assessments of exam, written reports and presentation. No traditional textbook was required for this course but online references were provided, along with the assessment criteria for each course activity.

The delivery of the E-Business course was conducted by blending Web2.0-Apps remotely and physically meeting students in classroom. The students were given enough time to present their findings and benefit from the course content. This study enabled them to explore the impact of Web2.0-Apps on their knowledge acquiring skills and other skills necessary for their professional development.

Implementation of Web2-Apps in the E-Business course

Micro-blogging through Twitter was used in the course. Students were requested to tweet in this course for issues relevant to E-Business course topics. The hashtag #BU266 was introduced to aggregate tweets or other web postings in real-time order. As an example, "*How to Develop a Successful Online Marketing campaign http://t.co/bmwGZkk #BU266*" reflects sharing an article relevant to a particular time during the course. In this course the hashtag #BU266 was assigned. The application which was used during the course to aggregate the students' tweets was http://wthashtag.com/ but this company was sold to http://whatthetrend.com/ during the offering of the course. The experience of this transition during the course exposed the students to the dynamics of web companies and changes of the applications service during the transition of ownership. In addition, a common blog http://bu266.blogspot.com/ was employed for this course to collect the students' posts of their essays and these were tagged with relevant keywords. The privacy setting of this common blog was kept public with the intention of encouraging a web presence for the students' work. Students of this course were encouraged to integrate videos of at most 3 minutes duration into their 10 minutes presentations to illustrate the concept under discussions.

With Web2-Apps, real time feeds is very important concept and in order to enable the students understand 'by example' the way Web2-Apps links real-time feeds, they were encouraged to open an account on LinkedIn and link their Twitter account with LinkedIn. In this way the student tweet is automatically posted on his/her LinkedIn home profile.

Another emphasis in this course is the enrollment in the Google Online Marketing Challenge. Students were divided into eleven teams. Each team worked with local client to promote the client webpage within 3 weeks of online marketing campaigns using Google Adwords application. Google credit $200 into each team's account on Adwords to accomplish their pre-planned campaign objective. The WIKI from Moodle platform was used in this course to facilitate the communications and collaborative team writing reports of their marketing campaigns. Google calendar were used to track and remind teams of the due dates of the different stages of the execution of the online marketing campaign.

Methodology

Analyses are based on qualitative as well as quantitative data collected during the course. The Web2-Apps study was administered on 59 students majoring in Business with a minor in Marketing. The E-Business course required for the minor was offered in two sections in the spring 2011 semester. The academic level of those students was average according to their grade point average records of Bethlehem University grading system. They were distributed between 40 female and 19 male students from the junior (49) and senior (10) years.

Three different data collection tools were used in this report the learning experience questionnaire, Google Marketing challenge results and Spreadsheet log file on Google documents.

Learning Experience questionnaire

The questionnaire was administered at the end of the semester when 58 students out of 59 submitted their responses. Questions assessing the students' perception on the Web2-Apps development skills involved a 6-point Likert scale and were based on an extension of Miller's Pyramid (training.net 2010) assessment of skills and performance. On the Web2-Apps development skills portion of the questionnaire, the students were asked about their skills in each application before and after with a 6-point Likert scale reply items starts with *didn't know, heard of, know about, knows how, show how* and the last choice is *does*.

Responses to questions concerning student's perception on the content of the course-topics employed a 4-point Likert scale: *didn't understand, beginning, developing* and ends with *accomplished*.

The questionnaire also included general questions about personal learning skills and open-ended questions. For the open-ended questions the respondents were limited to 140 characters in an attempt to have some conformity with their tweets style. The SPSS software was used to analyze the data from the Learning Experience questionnaire. The post course responses on the Web2-Apps development skills demonstrated a statically significant improvement over the pre course (mean difference = -22.85, t = -26.312, df = 53, $p < 0.001$). The correlation between pre- and post- course was moderate and statistically significant ($r = .54$, $p<0.001$).

Google Online Marketing Challenge Results

Students taking this course were grouped into 11 teams of 5-6 members each competed in Google Online Marketing Challenge. The Google challenge judgment had two components. The first component was a campaign statistics algorithm developed by Google that examines the team's Adwords account activities. The second component was the assessment of the two written reports by global academic judging panel of 17 members.

Spreadsheet log file on Google Documents

A Google spreadsheet file was shared online with the students for them to keep track of each account name for each student on every new Web2-App they had used during the course. There was no restriction on accessibility of this file.

Results

Pre-post course differences in mean scores for each Web2-Apps skill are provided in Table 1. The Web2-Apps used in the course are ranked according to the highest difference in the mean scores.

Table 1: Web2-Apps skills acquired from highest to lowest

Ranking	Web2-Apps	Difference of Mean Scores
1	Google Adwords	3.10
2	Twitter	3.10
3	LinkedIn	2.84
4	Hashtags	2.81
5	Google Calendar	2.74
6	Blogs	2.68

7	Google Document	2.38
8	Wiki	2.37
9	YouTube	0.89

Results show that students reported that Google Adwords and Twitter were the skills acquired most often. Further cross-tabulation of the descriptive statistic analysis for the pre- and post-course observations for Adwords and Twitter skills can be found in Table2 and Table 3. Results in both tables indicate that prior to the course, of the 58 students responding, 89.7% reported complete unfamiliarity with Google Adwords while 34.5% reported no knowledge of Twitter. However, after the course 72.4% noted that they understood how to use Google Adwords while 91.4% stated they got to be Twitter users.

Table 2: Percentage of total for Google Adwords students' skills pre vs. post course

	Google Adwords Skills after taking the course					
Google Adwords before taking the course	Heard of	Know about	Knows how	Shows how	Does	**Total**
Didn't Know…		20.7%	31.0%	25.9%	12.1%	89.7%
Heard of…	1.7%	3.4%		1.7%		6.9%
Know about…		1.7%		1.7%		3.4%
Total	1.7%	25.9%	31.0%	29.3%	12.1%	100.0%

That the assessments of Twitter and Adwords activities counted towards students' total grade could be one of the reasons for such an improvement. LinkedIn use in this course was not part of the course grade, but Table 1 shows LinkedIn ranked the 3rd in terms of student's acquisition between the apps employed in the course. This shows that there are almost assured by other motives than the grades that drive student's interest to learn new applications. Although 77.2% of the students reported that they didn't know anything about LinkedIn before the course. This finding shows the students' awareness of the likely importance of LinkedIn apps in their future good could be their motive to venture on their own in the LinkedIn application.

YouTube is at the bottom of the list in Table1 perhaps reflecting that students were already heavy users of YouTube, which is why it shows the little improvement among the students in acquiring more in YouTube.

Use of the spreadsheet log file during the semester to document the student's activities with the different applications, gave a space of comparison between the students themselves. This might stimulated some students to follow their classmates. The spreadsheet log file revealed another interest, as 35% of the 59 reported that they created their personal blog, in addition to the common course blog which was under use.

Table 3: Percentage of total for Twitter's students' skill pre vs. post course

	Twitter skills after taking the course				
Twitter before taking the course	Know about	Knows how	Shows how	Does	**Total**
Didn't Know…	3.4%	8.6%	13.8%	8.6%	34.5%

Heard of…	5.2%	19.0%	10.3%	20.7%	55.2%
Know about…		1.7%	3.4%	3.4%	8.6%
Knows how…				1.7%	1.7%
Total	8.6%	29.3%	27.6%	34.5%	100.0%

Other incentives might drive students to learn more and utilized their skills in the applications that they are using when this application relate to real life experience. The Google AdWords experience of the global Google Online Marketing Challenge gave a tangible outcome of this E-Business course. One team from this course won the Middle East/Africa regional winner of the 2011 Google Online Marketing Challenge among 4,429 teams competed from 68 countries (Schwartz 2011). Another team is listed among the semi-finalist and no other teams dropped out or were classified as ineligible campaign according to Google campaign assessment statistical algorithm (Google 2011).

Table 4: Percentage of total for LinkedIn's students' skill pre vs. post course

	LinkedIn skills after taking the course					
LinkedIn before taking the course	Heard of	Know about	Knows how	Shows how	Does	**Total**
Didn't Know…	5.3%	24.6%	17.5%	17.5%	12.3%	77.2%
Heard of…		3.5%	10.5%	1.8%	1.8%	17.5%
Know about…				1.8%		1.8%
Knows how…				1.8%	1.8%	3.5%
Total	5.3%	28.1%	28.1%	22.8%	15.8%	100.0%

On the indirect effect of the course Web2-Apps activities and assignments on the student's professional development skills, the students' response to the nominal questions of *yes, no, no effect* options were as follows.
87.72% agreed that their online-searching abilities improved
72.41% agreed that their writing skills improved
70.70% agreed that their team working skills improved
79.30% developed confidence on their knowledge acquiring abilities.

However, 82.2% found that it was necessary to get guidance from the mentor at the beginning of their work. From the open question, 41% of the students expressed differently but with the same meaning that they were overwhelmed by the load of work in this course as well as the many Web2-Apps given to them in one course.

Discussion and Conclusion

Assessment of students taking the E-Business course demonstrated the effectiveness of utilizing Web2-Apps in enhancing professional skills such as improved writing ability as by-product to the learning process toward achieving the knowledge construction through the interaction with the applications. The Web2-Apps facilitated communication on the subject matter among the students themselves and increase their interaction with the outside world locally as well as internationally on the course topics. However, the dependence on same Web2-Apps or repeating

the same activities for the following academic year might not be possible due to the dynamic changes on the net. What is available for free access might not remain so. The applications available now could be replaced with something different in few months and opportunities of today like Google Online Marketing Challenge might not be available for next month. Such contingencies must be considered in the offering of the same course for the next academic year, as well as new opportunities that might emerge by the continuous improvement in the technology.

The Web2-Apps pedagogical approach of this course is different than the traditional one in not making use of the traditional textbook and in the educator role of directing the learners toward student-centered approach. The textbook was replaced by online resources that provided students with materials that recently became available. It is suggested to conduct a useful comparative study where one group will follow the traditional educational method with text book against another group using Web2-Apps approach to validate its' effectiveness on the course topics. Further studies and piloting with varieties of Web2-Apps might consolidate the trend toward modernizing the educational system.

Opportunities for engaging the current generation of students in using the Internet and its application is tremendous, regardless of whether of students' are up to the level of ability. Internet applications provide educator with valuable opportunities to widen their scope of course delivery and customize the learning process to accommodate the different level of learning among the students to help them gain control on their own learning. Yet educators to follow such innovative approach is quite challenging for it requires the educators to be ahead of their students in keeping up-to-date with the development in Web applications and not just Web2-Apps. One is reminded of Margaret Mead's (1975) observation that in traditional societies, the old teach the young, but in rapidly changing societies, the old learn from the younger generation. The move towards Web applications approach and blend that in the education system requires the support of the universities management to get the change that makes impact on the learners.

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