<p style="text-align: center; color: red;">**<u>Special Sneak Preview</u>**</p>

Cloud-based Blended Synchronous/Asynchronous Shared Documents

Supporting collaboration and promoting active learning among students

By János Varga

The Issue

Today, many educators agree that active learning leads to deep learning. To achieve deep learning, students need to read, write, discuss, debate and engage each other in meaningful ways. They need to work together collaboratively and apply what they have learned. This type of collaboration is well supported in the classroom, where students can interact in teams or groups. Often classroom design, equipment layout and seating arrangements provide the right atmosphere for work to be socio-constructed, but school projects extend beyond the time allotted for classroom learning.

How can students be supported and encouraged to continue to engage with each other outside the school premises when work needs to be completed after teaching hours? Both asynchronous email and synchronous Instant Message (IM) chat offer only partial solutions to this problem. Recently however, a new group of blended synchronous/asynchronous tools have become available, providing a more complete solution. Research shows that these tools not only support but also can enhance out-of-class collaboration to promote active learning.

The focus of this report is to discuss the experience gained using a Cloud-based Web 2.0 blended synchronous/asynchronous Internet tool that provides shared documents to facilitate a new form of student collaboration. Several researchers believe that using such tools may enhance student engagement by enabling both in- and out-of-class collaboration, thereby facilitating active learning with positive outcomes. This article reports on the tool called ***typewith.me***. Studies show that students find that this application provides a shared document and proves to be an effective and efficient way of communicating while they engage in group projects.

In this report, we will first define some relevant terms. Next we will introduce the reader to different aspects of shared documents. After that, we will look at practical applications, common concerns, screenshots and students' remarks about this issue. Finally, we will provide useful references and a URL to a YouTube video demonstration of *typewith.me* .[i]

Defining Terms

Cloud computing[ii] is defined in Wikipedia (2011) as "the provision of computational resources on demand via a network". Resources are presented to the user in a simple view, called an abstraction. A provider's offering of abstracted Internet services is often referred to as "The Cloud". The tools discussed in this article use browser interfaces to facilitate such interaction.

The term **Web 2.0[iii]** is commonly associated with Web applications that provide interactive information sharing, interoperability, user-centered design and collaboration on the World Wide Web. According to Wikipedia (2011), a Web 2.0 site gives its users the free choice of interacting or collaborating with each other in a social media dialogue as creators and consumers of user-generated content in a virtual community. Web 2.0 technologies can be considered an extension of the previous generation of Web technology tools that presented information to the user, but did not allow for much interaction (Hazari, North & Moreland, 2009).

Emerging technologies provide opportunities for instructor–student as well as student–student real-time (**synchronous**) and/or time-delayed (**asynchronous**) collaboration. Beldarrain (2006) points to first-generation Web tools, such as email, chat rooms and discussion boards, as examples of these technologies. He predicts, however, that it is the second-generation of tools, such as the tool under discussion here, that promises to take interactivity to the next level to create engaging learning environments. Many second-generation telelearning/teaching tools have recently been developed that now effectively combine mobile learning, social interaction and collaboration. Even though collaboration technology may be instructionally imperfect, according to Taran (2004) it may be engineered in such a way as to support active student participation, engage deeper levels of learning and positively transform educational practices.

Information Technology (IT)[iv] as part of a teaching strategy is proving to be an important feature in today's classroom (in this report the terms Internet, IT and ICT are used interchangeably). As technology develops in leaps and bounds, new techniques, new software and new tools become available. The Internet brings a plethora of hitherto unthinkably powerful tools to educators' disposal and the development of such tools creates a push/pull effect on students who are becoming technologically savvy. Many of the new collaborative tools can be used to create innovative and exciting methods of teaching. They have the power to motivate and instruct students in ways that were not possible only a few years ago.

It is not only **Generation Y[v]** students (often called the Net Generation)—those born between 1982 and 1991—who feel at home with the Internet; young people born after those dates are even more comfortable and expect to use technology in the classroom. These students, who for the first time in history are more technologically advanced than their parents, will embrace the Internet in the classroom since their use of technology is already sophisticated and pervasive. Research conducted by the Insights division of Ypulse in September 2010 shows that 94 per cent of Gen Y students are on **Facebook.**[vi] It is therefore highly likely that all Generation Y students in our classrooms are already online and connected. It is also becoming evident that as technology grows to support out-of-class work, students will make use of the facilities offered by remote tools. They often prefer to continue their collaborative group-work after class from locations such as cafeterias, coffee-shops or from home, since all they require is a browser interface.

Pedagogical Benefits and Practical Advantages of Using Synchronous/Asynchronous Shared Documents

Pedagogical benefits

The conceptual framework of socio-constructivism, developed mainly by Vygotsky (1962) and Piaget (1967), has shown the importance of social interaction for learning and has been linked to active learning by Petress (2008), who states that students who share findings, exchange views and debate topics among themselves are typically active learners. Such exchanges add measurably to what is learned. These learners take a dynamic and energetic role in their own education, and through their participation learning becomes self-reinforcing. Students are not overly dependent on teachers and tend to regard them more as resource people. Active learning increases confidence, stimulates pride and imparts credibility in the eyes of the teacher, classmates and parents. It tends to make learning more fun and personally satisfying and stimulates a thirst for broader and deeper understanding.

Small-group learning—a method of active learning supported by socio-constructivist learning theory—is beneficial because of its ability to promote problem-solving skills, interpersonal communication and critical thinking (Clark et al., 2008). This is reinforced by Petress (2008), who says that "[. . .] for learners, not only is this method more energizing, but it also has been associated with greater assimilation of subject matter" (p. 1). It has a positive effect on student achievement in almost any discipline and when students are encouraged to produce new knowledge and to share that knowledge publicly, they will be compelled to produce their best work (Katz & Rezaei, 1999).

Studies on group learning with computers have reported a greater quantity and quality of daily achievement, more successful problem-solving, higher performance on factual recognition and higher application learning when compared with competitive learning or individualized learning with computers, according to Katz & Rezaei (1999). Educational technology can enhance good instructional design.

Practical advantages of using shared documents

- Ease of use and lack of confusion. A unique URL showing details of the assignment and naming team members can be created at the outset, for all the teams. The whole class can view this information on a shared Course Management Website. Teams are given direction and have their focus on a collaborative document from the word go. These documents may be pre-edited to include details of the assignment.
- Portability/accessibility. Any location with Internet access may be used in and out of class. Teams often arrange their online rendezvous before leaving the classroom.
- The instructor can not only monitor the team interaction, but can contribute by offering advice and motivating the team or messaging select individuals. By signing

in to a shared document, he/she can join that team, becoming part of the process rather than just an observer. A unique advantage is being created here—to witness or be part of the development of an assignment, rather than being the recipient of it after completion. Questions may be answered, points clarified, guidance given as the assignment is being worked on—before it is handed in.

- A permanent indelible record of group and individual effort/interaction is available.
- Publishing creates accountability and perhaps a sense of healthy competition, since it is not only the instructor who is the recipient of the product. Peers, other teams or even the whole class could have access to the work being produced, according to the level of sharing decided on for the URLs of the documents.

Practical Applications and Common Concerns

Comparing the functionality of a few of the available asynchronous/synchronous shared document tools:

A series of text tools became available over the past year. These have spawned from the release of open source code for an asynchronous/synchronous shared document application made available by etherpad.org. The tools have added to the functionality offered by the older and better-known Google Docs by allowing instant messaging and a timeline function. Some of these programs and their functionalities are listed in Table 1. The terms in the column headings are fully explained in the succeeding paragraphs. A more extensive list of programs is available by following the **link**[vii] in the Useful References section of the article.
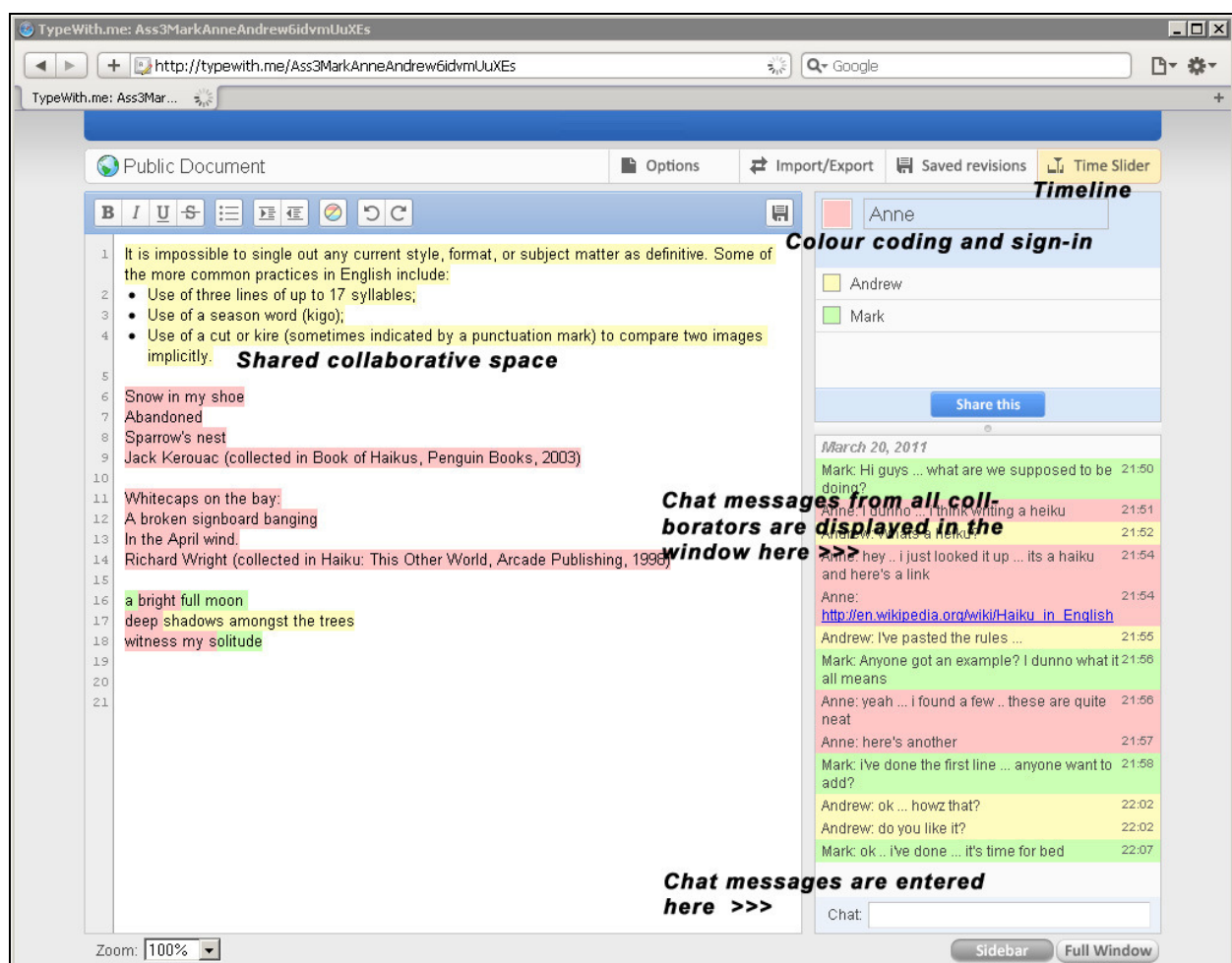
Table 1 - Some of the tools now available on the Internet

	IM	Timeline	Colour-coding	Sign-in	Free/fee
typewith.me	✓	✓	✓	No	Free
sync.in	✓	✓	✓	No	Both
ietherpad.com	✓	✓	✓	Both	Free
piratepad.net	✓	✓	✓	Both	Free
Google Docs	No	No	✓	Only	Free

Asynchronous/Synchronous shared documents:
The shared documents referred to in this table have both asynchronous and synchronous capability. Shared documents are asynchronous in the sense that they may be updated at any time, regardless of where or when other users are online. Additional synchronous capability means that data can be entered in the document in real time even when other users are online, simultaneously with the pressing of the key of any letter on the keyboard. Although one might expect the simultaneous entering of data to be confusing for the users,

in practice entries do not interfere with each other. On the contrary, the facility of writing simultaneously tends to create a dynamic, interactive and collaborative feeling among team members. As each person's key entry is colour-coded, it is clear who enters what text, and teams appear to enjoy the process of dynamic co-creation. One word of caution however: teams need to be relatively small—3 students are ideal but 4 or 5 are workable. Beyond this number it might become confusing for team members to manage and follow each other's chats and entries.

Figure 1 - The layout of the Typewith.me window

Chat instant messaging (IM):
The window on the right-hand side of the screen facilitates chatting between users. These chat messages are not letter-by-letter synchronous (as the shared document is made to be) and will appear in the window of other users only once Enter has been pressed on the sender's keyboard.

References

i Link to a YouTube video entitled "Computer-supported collaborative learning (CSCL) using Typewith.me shared document". The video discusses the layout of the *typewith.me* window, showing the functionality of the tool and offering a live demonstration of three collaborators using the tool to co-construct a Japanese haiku. It also demonstrates how to use the timeline to re-create the original text entry, character by character, edit by edit and insertion by insertion, bringing the document to its current state:
http://www.youtube.com/watch?v=rU56WdH0wQ0

ii Wikipedia entry on Cloud computing where the principle behind "the Cloud" is that any computer connected to the Internet is connected to the same pool of computing power, applications, and files. Users can store and access personal files such as music, pictures, videos, and bookmarks or play games or use productivity applications on a remote server rather than have to physically carry around a storage medium:
http://en.wikipedia.org/wiki/Cloud_computing

iii Wikipedia entry on Web 2.0. The term Web 2.0 is associated with Web applications that facilitate participatory information sharing, interoperability, user-centered design, and collaboration on the World Wide Web. A Web 2.0 site allows users to interact and collaborate with each other in a social media dialogue:
http://en.wikipedia.org/wiki/Web_2.0

iv In a previous Profweb article, "A Guide for Integrating ICT into a Program", Roger De Ladurantaye clarifies the possible confusion with the use of these terms. He explains that IT stands for Information Technology and that ICT is short for Information and Communication Technology. These are synonymous and in French the most commonly used term is TIC, which stands for Technologie d'information et communication:
http://www.profweb.qc.ca/en/publications/reports/a-guide-for-integrating-ict-into-a-program/the-issue/index.html

v Generation Y—also known as Gen Y, the Millennial Generation (or Millennials), Generation Next, Net Generation and Echo Boomers—describes the demographic cohort following Generation X, and are accorded various dates of birth. According to Wikipedia, commentators have used varied dates ranging from the 1970s to the early 2000s for this group; see
http://en.wikipedia.org/wiki/Generation_Y. Ypulse places the birth dates for Gen Y students between 1982 and 2004; see the article referred to in footnote iv above. According to social historians Howe and Strauss, the Millennial Generation are those born between 1982 and 2002:
http://eubie.com/millennials.pdf.

vi Social Network Disconnect Friday, October 8, 2010, 10:24 AM. Dan Coates, president of Ypulse, a leading authority on tween, teen, college and young adult insights for marketing, reports in Mediapost. The report is on research conducted by their Insights division in September 2010 on the Gen Y generation's use of technology, referring to those born between 1982 and 2004:
http://www.mediapost.com/publications/?fa=Articles.showArticle&art_aid=137299&lfe=1

[vii] This is an Etherpad link to a list of shared document sites which are available to the general public. The sites listed do not have any affiliation with the Etherpad Foundation. Etherpad warns that all such public sites may be indexed by Google. The problem concerning security is discussed above in the section under Common concerns: Document security:
http://etherpad.org/public-sites