Teaching Tip

Microsoft or Google Web 2.0 Tools for Course Management

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ABSTRACT

While Web 2.0 has no universal definition, it always refers to online interactions in which user groups both provide and receive content with the aim of collective intelligence. Since 2005, online software has provided Web 2.0 collaboration technologies, for little or no charge, that were formerly available only to wealthy organizations. Academic institutions at all levels are experimenting with these technologies to improve student learning experiences, and prepare them for a world in which work can be effectively accomplished through collaboration over the Internet, and geographic and time differences become increasingly irrelevant in sharing knowledge. Web 2.0 technologies are not limited to enriching course content. They can also be incorporated into the management and the delivery of college courses as well as the coordination of virtual teams. Detailed comparisons of the two most popular Web 2.0 office technologies from Google and Microsoft are provided in this teaching tip with examples of ways that Google online applications are used in support of managing a large college-wide computing introductory course.

Keywords: Collaboration, Office Live, Google Docs, Course management

1. INTRODUCTION - THE COLLABORATION IMPERATIVE

Collaboration is a major area of focus for corporate America. Cisco Systems has invested heavily in video collaboration systems within the last two years counting on Web 2.0 technologies to drive profits for the next five to ten years (Chambers, 2008). Popular collaboration software system Microsoft SharePoint reached a billion dollars in sales in 2008 (McDougall, 2008). It is the fastest selling software in the product history of the company. The tools of modern collaboration are the technologies of Web 2.0 in which communities of interest share content and commentary through multimedia files, wikis, and blogs. And increasingly, content is finding people rather than the other way around. The collaboration tools of Facebook captured an entire generation in less than five years. CEO Mark Zuckerberg (2009) recently stated that Facebook has 150 million active users -- a population greater than that of Japan. The obvious popularity of collaboration software in social networks, and the availability of free software tools on the Internet motivate educational organizations at every level to help students electronically connect and collaborate in preparation for a world in which team work is not constrained by geography. Nevertheless, research work in this area is just sprouting and a variety of studies on how to employ Web 2.0 in support of collaborative learning have been untaken, though research findings are still quite limited (Lockyer and Patterson, 2008; Rollett, Lux, Strohmaier, Dosinger, Tochtermann, 2007; Selwyn 2007).

Prior to 2005, individuals or organizations needed significant resources to electronically support collaborative team work. The introduction of browser based productivity software by Google in 2005 triggered a wave of free online word processing, spreadsheet, presentation, wiki, and discussion forum software. At Western Michigan University, we are using collaboration software for course management as well as the enrichment of course content for a college-wide computing core course. This teaching tip focuses on ways in which online collaboration applications could be used to support the management and delivery of large-sized classes. A detailed comparison of two most popular online collaboration tools from Google and Microsoft is given in the next section, followed by examples of ways in which Google applications are used in support of course management.

2. COMPARISON OF GOOGLE APPS AND MICROSOFT OFFICE ONLINE

We have used online collaboration office tools in our courses only from the two most popular providers -- Microsoft and Google. Free online office suites are also offered by ThinkFree (ThinkFree, 2009) and Zoho (Zoho, 2009) but neither enjoys the branding of the two market leaders. To date, no online (i.e., Web-based) office software is as powerful or versatile as Microsoft Office, but the capabilities of online productivity software continue to improve. Since neither ThinkFree nor Zoho applications have been used in our courses, online software comparisons will be limited to the collaboration software systems offered by Microsoft and Google.

2.1 Microsoft Office Live (http://www.officelive.com)

Office Live is a convenient way to store and share files. Users get the full power of Microsoft Office because the site is designed for MS Office files. Users can create workspaces which can be shared with up to 100 email addresses (Srivastava, 2009). The default workspace created with the creation of a free Office Live ID is called Documents, and it allows users to share individual documents with designated email addresses. All subsequent workspaces that are created only allow workspace sharing, i.e. all documents stored in those workspaces are available to shared viewers or editors (Raina, 2009). The Office Live system can track document versions. The maximum storage space for free Office Live user accounts is 5 GB (Srivastava, 2009).

Screen sharing is available through a free download of Microsoft SharedView, which permits up to 15 people to participate in a shared session with screen control available to all participants (Microsoft, 2009). Lists with connection capabilities to Outlook and wikis (wikis in the Office Live system are designated as Notes) can be created using only browsers. Office productivity files like Word processing documents, spreadsheets, and databases are expected to be MS Office documents. This makes the full power of Microsoft Office available, but requires that users have the MS Office suite on their client computers. Microsoft has announced plans to make "lightweight" versions of Office available online with the next Office release (Capossela, 2008). The learning curve for Office Live is minimal since most documents are created and edited in MS Office. All users of Office Live must have a Windows Live ID, which Microsoft offers at no charge. Microsoft also offers an Office Live Add-in which allows users to directly access documents stored online through the Microsoft Office suite installed on network client computers.

2.2 Google Groups, Docs, and Sites

Google Groups (http://groups.google.com) are communication tools with three functional sections: (1) discussion forum / listserv, (2) wikis (designated as Pages in groups), and (3) Files. The size of individual files uploaded to the Files section is restricted to 10 MB with total file storage of 100 MB (Virden, 2009). Discussion forums provide threaded topics and responses, and can be searched with the Google search engine. The forum can be configured as a listserv to automatically deliver postings to email addresses. Frequently, files in the file section are associated with wiki pages. Links in both the discussion and pages sections can bring users to Google Docs.

Google Docs (http://docs.google.com) provide online word documents, spreadsheets, and presentation software that can be created and edited with only a browser. Although the applications lack the sophistication of MS Office, many typical composition, calculation, and presentation activities can be accomplished effectively. Documents are easily shared with up to 200 email addresses. The Google system requires granular sharing, i.e. every document must be individually shared, but multiple editors can be active in the same document simultaneously. Depending on the document type, Google docs support 10 to 50 simultaneous editors (Google, 2009). The system tracks versions, and there is a built in chat feature in Google spreadsheets.

Google Sites (http://sites.google.com) offers an online collaboration space for documents, calendars, videos, and Web parts associated with a project, team, or theme. The functionality of both Groups and Docs can be organized in a Google site in variety of different ways.

2.3 Comparing Microsoft and Google Online

Online collaboration software provided by Microsoft and Google are compared in Table 1. Factors and relative rankings are the result of personal assessments and student feedback employing Office Live and Google applications in four Computer Information Systems courses. Both Microsoft and Google allow document owners control over viewing or editing permissions and both software systems track versions. The powerful and versatile tools of Microsoft Office, and the familiarity of MS Office software are advantages for Office Live. Google office capabilities are much less robust, and Google offers no online relational databases. The ability to link Google Groups, Docs, and Sites provides a more versatile organization space for the Google system compared with Office Live. Yet Office Live provides default sharing of all documents within workspace hierarchies while Google requires all documents to be shared individually. Google also provides a tool to easily run YouTube videos within presentations or sites.

The greatest advantage of the Google system is simultaneous editing. Up to ten editors can work simultaneously in a Google document, and 50 in a Google spreadsheet. Google spreadsheets even offer instant messaging. By comparison, editors lock out others from Office Live documents until they finish. Version tracking is particularly valuable in the Google system since multiple editors can overwhelm the system resulting in document corruption. In addition the automatic saving of Google documents can also cause problems if significant mistakes are made by editors. If a problem occurs with a Google document, the owner can review version history and make the last good version the current document. Google documents can have restricted access or be published to the world as HTML pages. Office Live documents are restricted to email addresses with permission to view or edit.

All Google software can be used with nothing more than a browser and Internet connection. By employing Google Gears, Google documents can be edited offline so even the Internet connection is not always needed. Effective use of

Office Live requires installation of MS Office on the client computer, which automatically provides offline access. MS Office installations may not always be necessary in the future. Microsoft plans to introduce browser-based office products with the next release of Office (Capossela, 2008).

2.4 Choosing Microsoft or Google Online Software

Both Office Live and Google Docs provide excellent support for online shared documents. Students seem to prefer the multiple editing capabilities of the Google system, and the more robust capabilities and familiarity of the Microsoft process. Making an optimum choice can be done only in the context of team preferences and their working environments, but two factors can help determine which software system would work best: (1) the extent of collaboration vs. cooperation and (2) the number of shared files.

Although both cooperation and collaboration can describe acting together for a common purpose, the former is usually associated with largely independent actions that are coordinated for a common purpose. The latter involves more interdependent activities with more frequent communication, and substantial iterations. Team activities that are at the collaboration end of the cooperation-collaboration continuum are more likely to benefit from the simultaneous editing capabilities of Google docs and the more versatile organizational possibilities of the Google system. If numerous files must be shared, the hierarchical work spaces in the Office Live environment are much easier to work with than the granular sharing requirements of individual Google documents. Figure 1 shows the optimum positions of Google and Microsoft with respect to file sharing and degree of interactivity.

Our large courses with multiple instructors have significant collaboration and communication components, but the number of files that must be shared are relatively few. We see ourselves in the Google space of Figure 1, and choose to manage communication and coordination of instructors in our large courses with Google applications

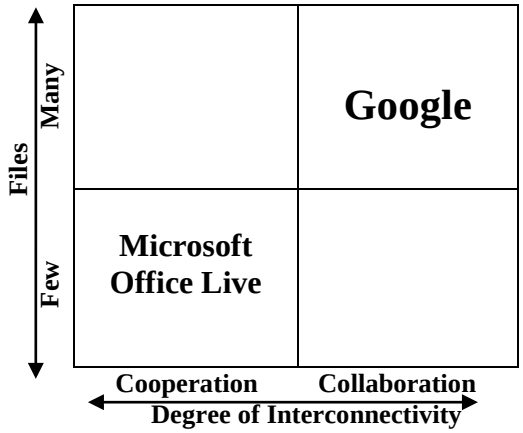

Figure 1. Optimum Sharing Environments for Office Live and Google Docs

	Microsoft Office Live		Google Groups, Docs, Sites	
Factor	**Rank**	**Comments**	**Rank**	**Comments**
Ease of document sharing	+++	Permissions in shared workspaces cascade to documents in workspaces.	+	All documents must be individually shared to edit
Editing Functionality	+	One editor at a time – documents are locked during editing	+++	Allows 10 to 50 editors at a time
Learning Curve	+++	Office familiar to many	++	Many common toolbars, easily searchable
MS Office Compatibility	+++	No issues – uses MS Office documents	++	Can import Office 97-2003 documents or export to same format
Online Videos	+	PowerPoint capability	+++	YouTube webpart fits seamlessly into presentations or sites
Organization	++	Workspace organization for documents	+++	Sites and Docs can be integrated in many ways for teams, common themes, or projects.
Publishing online	+	Only available to email addresses with permission	+++	Available only to shared email addresses or as published Web pages
Required Resources	+	MS Office required on client computer. Browser office tools expected with next Office release	+++	All capabilities accessible with only a browser and internet connection
Sophistication	+++	Powerful features of MS Office	+	Basic office functionality, limited formatting
Rank: + marginal……. +++ outstanding				

Table 1. A Comparison of Microsoft and Google Online Collaboration Software

3. GOOGLE IN COURSE MANAGEMENT

The Introduction to Business Computing course at Western Michigan University (WMU) involves 15 to 18 sections, one lecturer and four computer laboratory instructors. Communication among instructors is accomplished through Google Groups and Docs.

3.1 Google Groups

The instructor Google Group provides a discussion forum for course issues that is continuous, in contrast to the discussion forums in course management software that are available only while courses are active. Group discussions are configured with listserv functionality so all posts are sent automatically to email inboxes. Wiki pages include tips and instructions that involve course management or online training software. One wiki page acts as a table of contents for current semester instruction and documentation. The Google Groups Pages tab is shown in Figure 2.

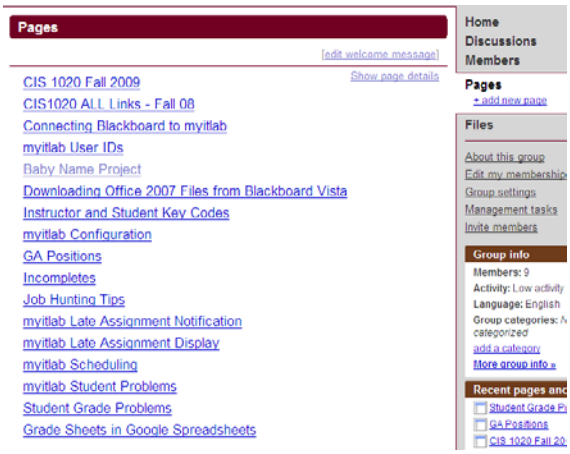

Figure 2 Google Groups Pages Section

3.2 Google Docs

Two Google spreadsheets also facilitate instructor collaboration. A shared instructor spreadsheet provides schedules for lectures and labs. Prior to Google spreadsheets, computer lab assignments were accomplished with an Excel spreadsheet sent to all lab instructors as an email attachment. About a week was needed to insure mutually acceptable computer lab assignments. With everyone now working on the same Google document, an acceptable assignment schedule takes less than a day. The shared instructor spreadsheet also provides grading rubrics for projects, a list of lecture quiz topics, and correct quiz responses to facilitate grading. A second shared Google spreadsheet (student sheet) contains lecture and lab schedules, office hours, assignment point breakdown, course grading information for students, and course materials information. The capacity to automatically republish a Google spreadsheet as a Web page is very beneficial to course communication with students. Any course instructor can edit the student spreadsheet, and changes will be immediately available to students through a URL provided in course management software. The student sheet published as a Web page is shown in Figure 3. Links which appear on the bottom of the Google spreadsheet become hyperlinks at the top of the published student sheet.

Each instructor has a grading worksheet in the document so students can see when any of their assignments were graded. Spreadsheet formulas automatically provide total points graded to date in every course segment once a date has been entered in the date column for an assignment. A sample grading worksheet available to students is shown in Figure 4. Instructors only enter data in the Date Graded column. Spreadsheet formulas calculate all point totals, as well as determine the most recent date for the total points row of each section.

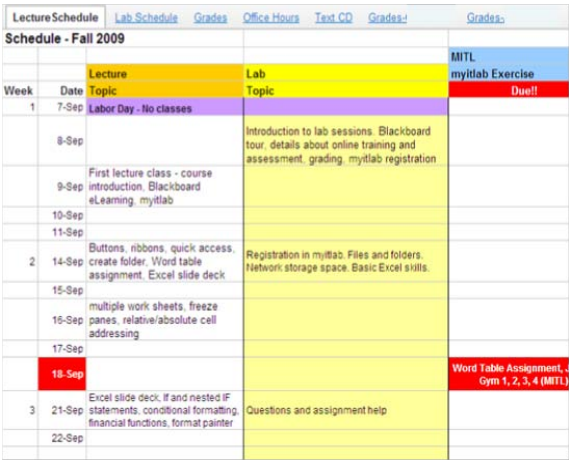

Figure 3. Student Google Spreadsheet Published as a Web Page

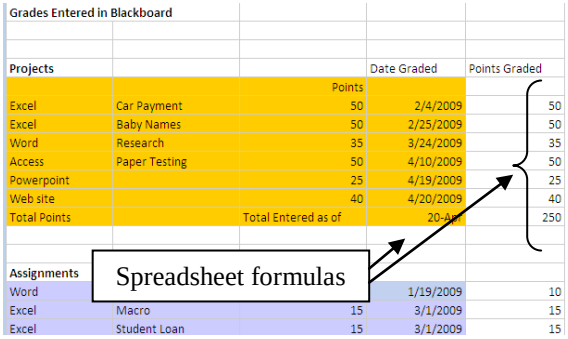

Figure 4. Student Google Spreadsheet Point Totals

3.3 Instructor and Student Benefits

Utilizing collaboration software for course management has benefits for faculty, graduate student instructors, and students. Graduate student computer lab instructors frequently comment about the convenience and effectiveness of shared course connections enabled by the discussion forums, listserv, tips, and rubrics available from wikis and shared documents. The combination of spreadsheet functionality and automated republishing of shared Web documents has been particularly powerful. With a few mouse clicks, students can get real-time information about grading and point totals, and all lab instructors have to do to provide that information is add the dates they grade assignments in shared Google

spreadsheets. Comments of graduate student lab instructors indicate that software provides a sense of connectivity to the course, and each other. The tips and rubrics make course delivery more uniform across different sections. Finally, the graduate students like the convenience of reduced inquires from students about points and grades.

4. CONCLUSIONS

Web 2.0 technologies have been recognized by academics as enablers for collaborative learning and course management in higher education. Tools are flourishing with lasting momentum, and there will be a continuing need for guidance in utilizing them. We found significant benefits in large course (> 400 students) management, and we anticipate additional benefits in the future as capacities increase for coordination and collaboration. We can expect Google and Microsoft to continue software innovation in Web 2.0. Microsoft has a rich history of empowering individuals and groups through software, and its announced intent to bring Office functionality online in the near future is evidence of an enduring online strategy. In a very short time, Google has become a symbol of online innovation. Google intends to raise collaboration to a new level with Google Wave (Google, 2009a) due for release sometime in 2009.

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