Software Tools for Collaborative Writing

Brian Potts[1], Jacqueline DaVania[1], Kimberly A. Barchard[1], Wind Goodfriend[2], and Bettina Casad[3]
1. University of Nevada Las Vegas 2. Buena Vista University 3. California State Polytechnic University, Pomona

Presented at the Western Psychological Annual Convention in Irvine California, April 2008

Abstract

Writing a paper with multiple co-authors allows researchers to write better papers. They can take into account different perspectives and build on the expertise of more people. They can write more comprehensive reports, in a shorter period of time. Finally, they can write manuscripts more quickly, which may be necessary if the writing is precipitated by a specific event or if the content area itself changes rapidly.

Many tools can assist researchers in collaborative writing. Two of these are Microsoft Word and email programs. Word has two useful features. Track Changes allows all authors to see who made what changes. Comments allow authors to indicate a section is incomplete or unclear or that it should be moved to another section. Many email programs also have features that facilitate collaborative writing. First, email allows researchers to discuss a project and send documents back and forth. Second, by saving these emails, researchers can use the search features to look up previous conversations. Third, many email programs have calendars and meeting planners, to keep track of important deadlines, send email reminders when deadlines are approaching, and schedule meetings when everyone is available. Most of the researchers we have talked to were able to manage collaborative projects with no more complicated tools than Microsoft Word and their email programs.

Microsoft Word does not allow simultaneous editing: only one person can edit the document at a time. We will therefore discuss two tools that allow simultaneous editing. The first of these are wikis, which are collaboratively written web pages. The most famous wiki is wikipedia, an online encyclopedia written by people from all over the world. A private wiki, where only specified people can view and edit the web pages, can be used to write a research paper. However, wikis are very simple web pages, and features such as spell-checking and integrated figure-drawing may be absent. The second tool that allows simultaneous editing is Google Docs. Google Docs allows the creation of documents, spreadsheets, and presentations. It is integrated with Microsoft Office 2007, to allow the full functionality to which researchers are accustomed.

Introduction

Having multiple people involved in the writing a paper can making writing better, faster, and more fun. Collaborative writing can be higher quality than writing done by a single person, because the paper can incorporate a wider variety of backgrounds, research literature, and perspectives. As well, different contributors will have different skills, and authors can divide up the work according to their specializations. For example, one person can do the statistical analyses, and another can focus on the literature review. Writing collaboratively can be faster, because the authors can divide the work between them, and can build upon each others' ideas. And writing collaboratively can be more fun. Academia can be isolating. Working with colleagues and sharing ideas can be interesting and stimulating.

This presentation will discuss four software tools that can be used to make collaborative writing more efficient: email, Microsoft Word, wikis, and Google Docs. We will begin by discussing features of email and Word that allow co-authors to more effectively pass documents back and forth, and communicate clearly about those documents. Then we will talk about wikis and Google Docs, two programs that allow co-authors to work on the documents simultaneously.

Email

Most of you use Email every day. It is so commonplace that you may not think of it as one of the most common and useful means of collaborating with others. Email allows you to communicate with people who are not

physically in the same location as you. Phones, paper letters, and faxes also do this, but email is such a powerful tool that we want to draw it to your attention.

Share Information
Fundamentally, email allows you to share information with others. You can send information to one or many recipients. You can also forward an email to others; this saves times and prevents errors. And finally, you can attach files to your emails. This is something you cannot do with a phone message or a fax. Thus email is an effective way to pass ideas, documents, and even entire folders back and forth between researchers.

Asynchronous
Emails are an asynchronous form of communication. What this means is that you can send information at any hour of the day or any day of the week; the recipient does not have to be available when you send the information. There are advantages and disadvantages of using asynchronous communication. One advantage is that you do not need to find meeting times that fit everyone's schedules, and you can collaborate easily with people in other time-zones. Another advantage is that the recipient can choose when to read your email. If they have scheduled time on Thursday for working on a project, then they can read your email on Thursday. However, one other feature of email communication is that the recipient can choose how much time to spend on your email. If they want to delete the email without reading it, they can. If they want to provide a 2-minute response, they can. If they want to spend several hours on it, going through multiple drafts and asking for feedback from others, they can. This is an advantage for the recipient but is often a disadvantage for the sender. If the sender does not receive a prompt and adequate reply, they should follow up with another email or a phone call. Additional strategies for using email effectively are given in the "Structures, Norms, and Protocols for Collaboration across Institutional Boundaries" presentation, later in this symposium.

Mobile Devices
Emails can be accessed through computers but can also be accessed using mobile devices, such as cells phones, and PDAs (e.g., palm pilots). This allows you to continue ongoing discussions when you are out of the office, and can be helpful if you will be delayed for a meeting or unable to attend.

Show Relationships
Emails programs also show relationships between separate emails. You can use Reply with History to include previous emails in the current email. And many email programs allow the use of Discussion Threads so that separate emails are linked together in the email program to show that they are all on the same discussion. Showing the links between the emails allows clearer communication and prevents confusion. Because it is easy to show the links between emails, you can use a series of short emails to have a long discussion on an issue, rather than having each person send a long monologue of their own opinions; this makes the discussion more interactive. Each email does NOT need to be self-contained, but can be a part of a broader discussion.

Stored and Organized
Emails can be stored and organized. You may keep hundreds or even thousands of old emails, and organize them into folders. This allows you to find and re-read old emails, whenever you want. Because emails have subject lines and a list of the authors, you can re-read a series of emails on one topic. Because the emails have date and time stamps, you can read the emails in the order in which they were sent, which makes them easy to understand. If the information contained in the emails was updated (for example, you revised a document and sent it back), then you know that the most recent email has the updated information.

Searchable
Emails can be searched. If you are not sure where a particular email is, most email programs will allows you to search for a particular sender, subject line, or even a word or phrase that occurs in the body of the email.

Other features
Some email programs have extra features that are also helpful for collaboration. For example, Gmail includes a calendar that can be used to show schedules, deadlines and arranged meetings. Gmail also has a chat room, where multiple people can have a discussion.

Free
Finally, email is free. There are several different providers of free email accounts, available through the Internet. These include Gmail, Yahoo, and Hotmail. So, researchers have this wonderful tool for collaboration, and they can use it with anyone, including students, researchers in other countries, and people outside of academia such as doctors and private clinicians. There is no cost involved.

Microsoft Word

Many psychologists use word processing programs, without really thinking about the features they have that can facilitate collaborative writing. We will discuss two features of Microsoft Word that are particularly helpful when writing a document with others: Track Changes and Comments. Similar features are probably found in many other word processing programs.

Track Changes
Track Changes is a feature that shows what changes were made to the document, and who made them.

Easy to Turn On and Off
It is easy to turn the Track Changes feature on and off. To turn it on, click on the Tools menu and scroll down to 'track changes'. While Track Changes is turned on, Microsoft Word will keep track of the changes you are making. To turn off the Track Changes feature, click on Track Changes in the Tools menu again.

Shows Additions, Deletions, and Formatting Changes
When the Track Changes feature is turned on, Microsoft Word will keep track of additions, deletions, and formatting changes. These changes are easy to spot. Material that has been added is put in a different color. If you are using the Print View mode, deleted material is listed on the right hand side, and if you are using Normal View mode, deleted material is crossed out, new material is in a different color. In both views, all changes are indicated by a vertical line on the left hand side. See Figure 1.

Accept or Reject Each Change
When the paper is returned to the first writer, they have the option of accepting or rejecting each of the changes that was made. Microsoft Word makes this particularly easy. There are buttons you can click on, where it will show you the next change, and you can then click on a button to accept or reject that change.

Because the first writer knows that they are not giving absolute editorial power to others, they can ask for feedback from more people, allowing them to edit the original document to make their suggestions. They do not need to worry that others might accidentally introduce errors or that they will ruin their writing, and that such mistakes might be overlooked or time-consuming to correct. Track Changes makes every change visible so it can be individually accepted or rejected.

Accepting or rejecting each individual change is not the only option. Writers also have the option of accepting all changes in the document or editing the suggestions made by others. But the ability to individually evaluate each change is very valuable.

Changes are Shown in Location
With Track Changes, the suggested changes are shown in exactly the spot where they are relevant. This eliminates the needs to figure out what a suggestion is referring to. Many of us have given and received feedback that consisted of stand-alone comments, saying that a certain paragraph was unclear, or a certain word was misspelled. The person receiving that feedback then has to locate the specific paragraph or word. This is easiest if the feedback gives the precise page number and line number, but even in those circumstances, it can

be hard to figure out precisely where the comment applies. With Track Changes, the suggestion is made in precisely the spot where it applies. This reduces confusion and the time it takes to evaluate and implement suggestions.

Many of you may be aware of the Track Changes feature, but you likely haven't used it much. I hope from this discussion you will see how it can help you improve communication with co-authors and facilitate efficient co-authoring and editing.

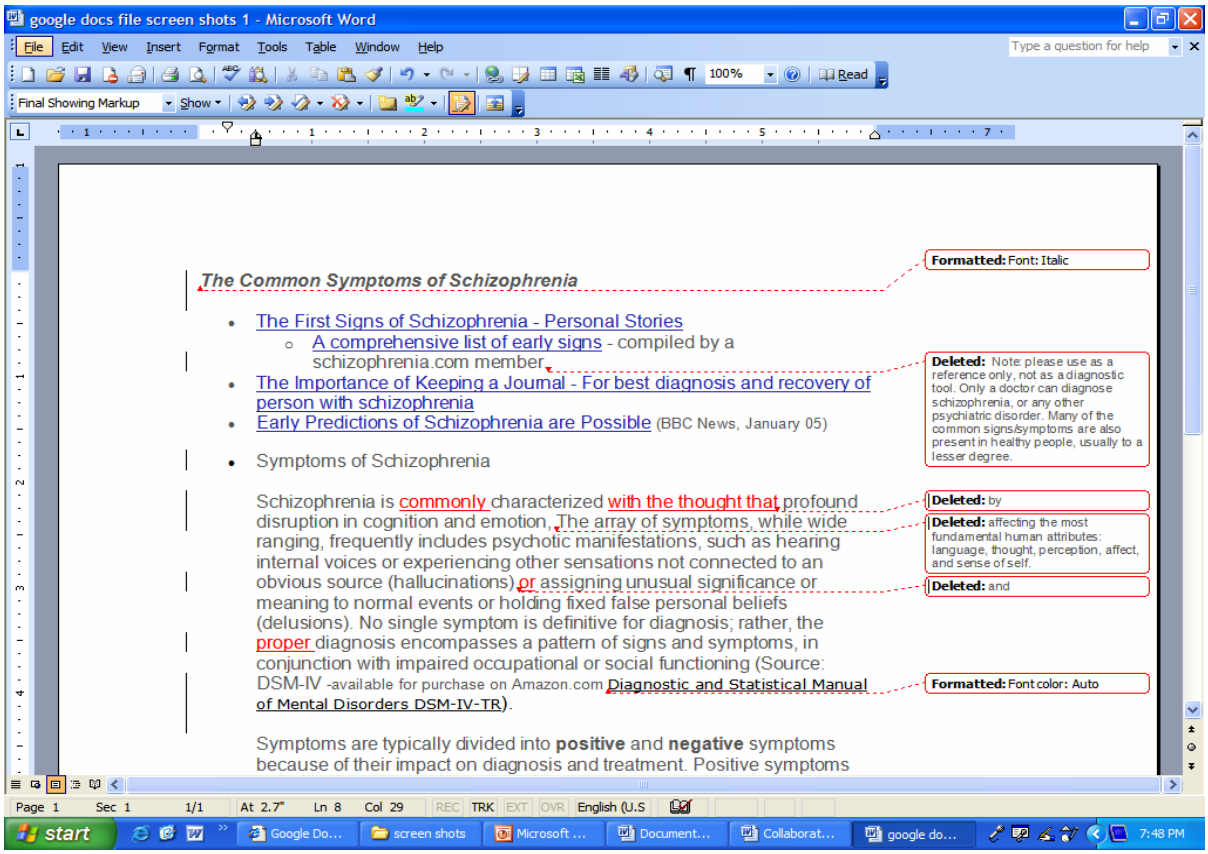

Figure 1
Track Changes in Word

Comments

The second feature of Microsoft Word that facilitates collaborative writing is the Comments Feature. This allows you to add comments or feedback on the paper without altering the paper itself. Comments can be added to individual words, or to larger sections such as phrases, sentences, or paragraphs. See Figure 2.

Easily Inserted

To insert a comment, just highlight the material that you would like to comment on, and click Insert Comment. A box will appear for you to type into. When you are finished typing, just click somewhere else in the document.

Easily Seen

Comments are easy to see. If you are in the Print Layout view, comments are given on the right hand side. If you are in the Normal view, comments are given at the bottom of the screen.

Easily Deleted or Modified

It's easy to delete a comment. Just click on the comment and then click Delete Comment from the menu that pops up. It's also easy to edit a comment. Just click inside the box and start typing. This can be handy if you want to have an on-going discussion with a co-author, without adding text to the paper itself.

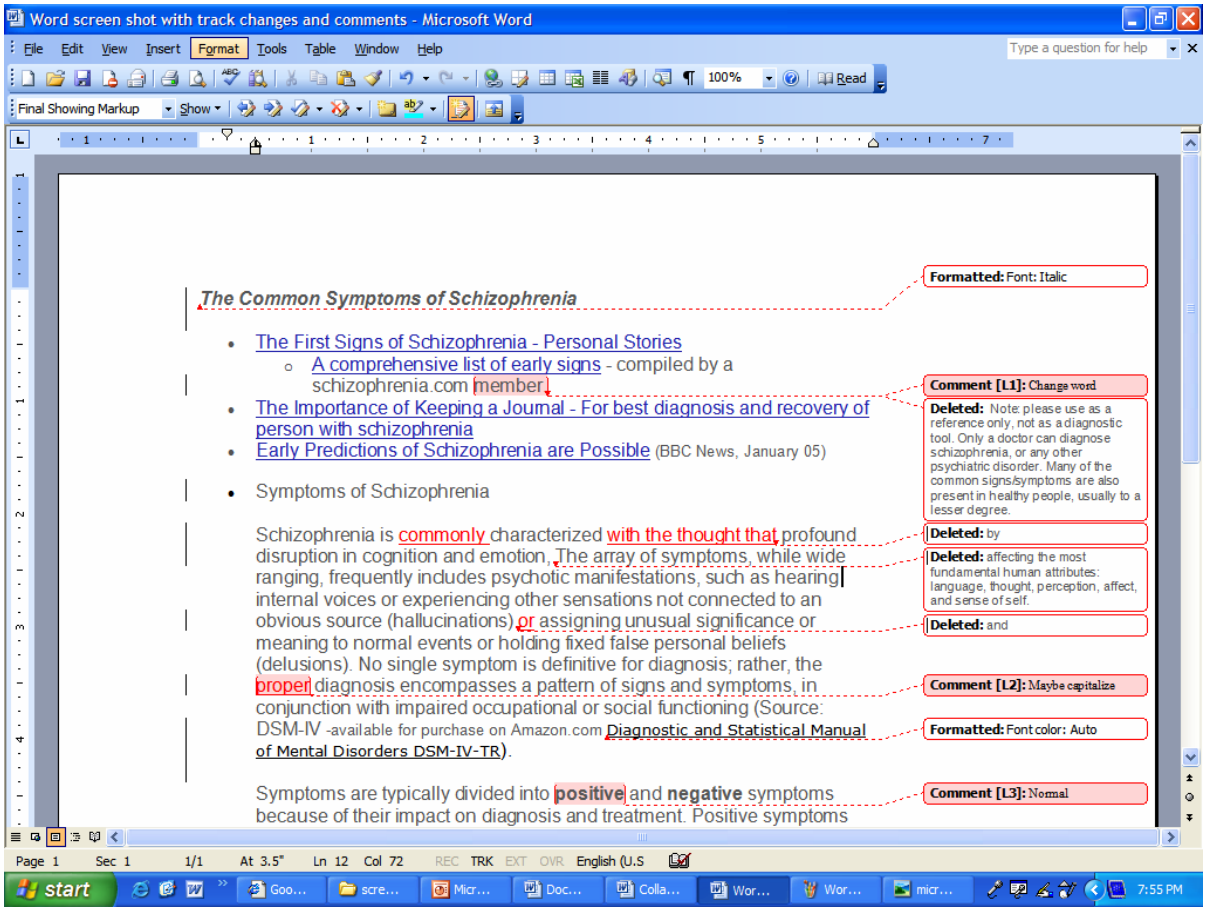

Figure 2
Comments in Word

Summary
In conclusion, Microsoft Word has a couple of features that can help with collaborative writing. Track Changes helps authors communicate their suggestions for additions and deletions more clearly. Comments allow authors to have side-discussions about the document without writing in the document itself. Both make collaborative writing more efficient.

Wikis

Another software tool that is helpful for collaborative writing is a wiki. A wiki is a software program that lets you create a web site. The unique feature of wikis is that the wiki software and files are both stored directly on the Internet, and so multiple people can easily edit the wiki pages.

Part 1: Features
Wikis have a number of features that facilitate collaborative writing.

Free
Most wikis are free. Because they are free, you can invite graduate students and undergraduates to join you on a project, and you don't have to worry that they won't be able to afford the software. You can also invite non-academics, like nurses, teachers, and sports coaches. And finally, if you or your co-authors are at an institution with few financial resources, or if you or your co-authors are students, you can use this tool. Regardless of who the collaborators are, they don't have to get any expensive software, and so your team can get started writing immediately.

Although most wikis are free, there are also paid-wikis. Paid-wikis typically have more features than the free wikis. If the free wikis do not have the features you are looking for, explore some of the options for paid wikis. Usually, the costs are relatively low.

Easy to Use

Creating a wiki is easy. Go to the homepage for the wiki program, and click on the option to create a new wiki. For some wiki programs, you must first create an account using your email address, and then it will allow you to create the wiki. Either method is easy.

Editing a wiki is also easy. Just type in the information you want. There are also standard formatting options, such as bold and centering.

Web-based

For most wikis, both the wiki software and the wiki pages themselves are stored on the Internet. Sometimes the wiki software has to be downloaded to your computer, but it can be downloaded directly from the Internet. Therefore, wikis can be accessed and edited from any location with an Internet connection. This expands the range of people you can collaborate: it does not matter if they are in the next room or in a country half way around the world.

As well, Internet access broadens where you do your work. Instead of being restricted to working in your office because a certain file might be located on your hard drive, wikis allows you to create and edit files from anywhere you choose, from your office to the comfort of your home to an Internet café in Bristol. This eliminate the need to take files with you everywhere, because once you've uploaded a file onto the server, it can be worked on anywhere through the Internet.

With traditional web development programs, the proprietary (and expensive) software program is stored on the hard drive of your computer. So if you are using a computer in an Internet café while on a trip, you do not have access to that software and cannot edit the web site. But with a wiki, you can. And your collaborators can too.

Simultaneous Editing

Because the wiki pages are stored directly on the Internet, authors do not need to wait for each other to send the documents back and forth before they can start working on them. As soon as the changes are made by one person, they are visible to all other authors. So, if another author starts editing the page, they know they have the latest version which incorporates all changes.

Some wikis have true simultaneous editing, in which multiple authors can be editing a page at the same instant. Other wikis have a check-in check-out system, so that if one person is editing the page, the program does not allow other people to edit it. Both of these features help multiple collaborators more efficiently on a project.

Allows Tables, Plug-ins, and Additional Features

You can add additional features to your wiki to increase functionality. There are plug-ins to add things like tables, spell-checking, and calendars. Features such as tables and spell-checking are necessary to create the types of professional research reports we use in psychology. Features such as calendars help collaborators work together more effectively.

Templates

Many wikis allow you to apply templates to your pages. These can be used to make your documents look more professional. Templates are particularly helpful for collaborative projects because they make it easy to use the same formatting in documents that are created by different people.

Platform Independent

Wikis are platform independent. Because wikis are accessed through the Internet, the wiki pages can be accessed and edited using any computer. It doesn't matter if you are using a Mac and your collaborators are using PC. It doesn't matter if you have a very old version of Microsoft Word and your collaborators have the

latest version. Or if you use Word and your collaborators use Works. The wiki pages can be accessed by any computer, using any Internet browser. This eliminates the time and confusion of converting files between different computer systems or different versions of a proprietary software program like Microsoft Word.

In addition, if you have different types of computers at home and at work, this will also be helpful. Many Mac users are forced to use PCs at work, which makes it difficult for them to edit files at home. By storing and accessing their files through the Internet, they avoid platform-specific software.

Multiple Levels of Access

Most wiki programs allow you to specify who can view the wiki. If the wiki is public, everyone on the Internet can see it. If it is private, then only specified people can view the pages. As well, most wiki programs allow you to specify who can edit the wiki. Perhaps only some of your collaborators should be allowed to edit the pages themselves, but you want to share the wiki with more people.

Can be Used to Organize the Project

Wiki pages can contain the content of your project, just like a Word document. But in addition, wiki pages can be used to organize the project. For example, you can list group members with their pictures, specify meeting times, and have a calendar that shows deadlines. To use the calendar to set up meetings you simply click the date and add an event. This way everyone involved has a reminder of when you will be meeting.

Part 2: What a Wiki Looks Like

There are many different wiki programs. Wikipedia compares the features of over 90 different wikis, but there are probably hundreds of different wikis out there. For this presentation, we will show you one wiki program that is free and easy to use: PBwiki.

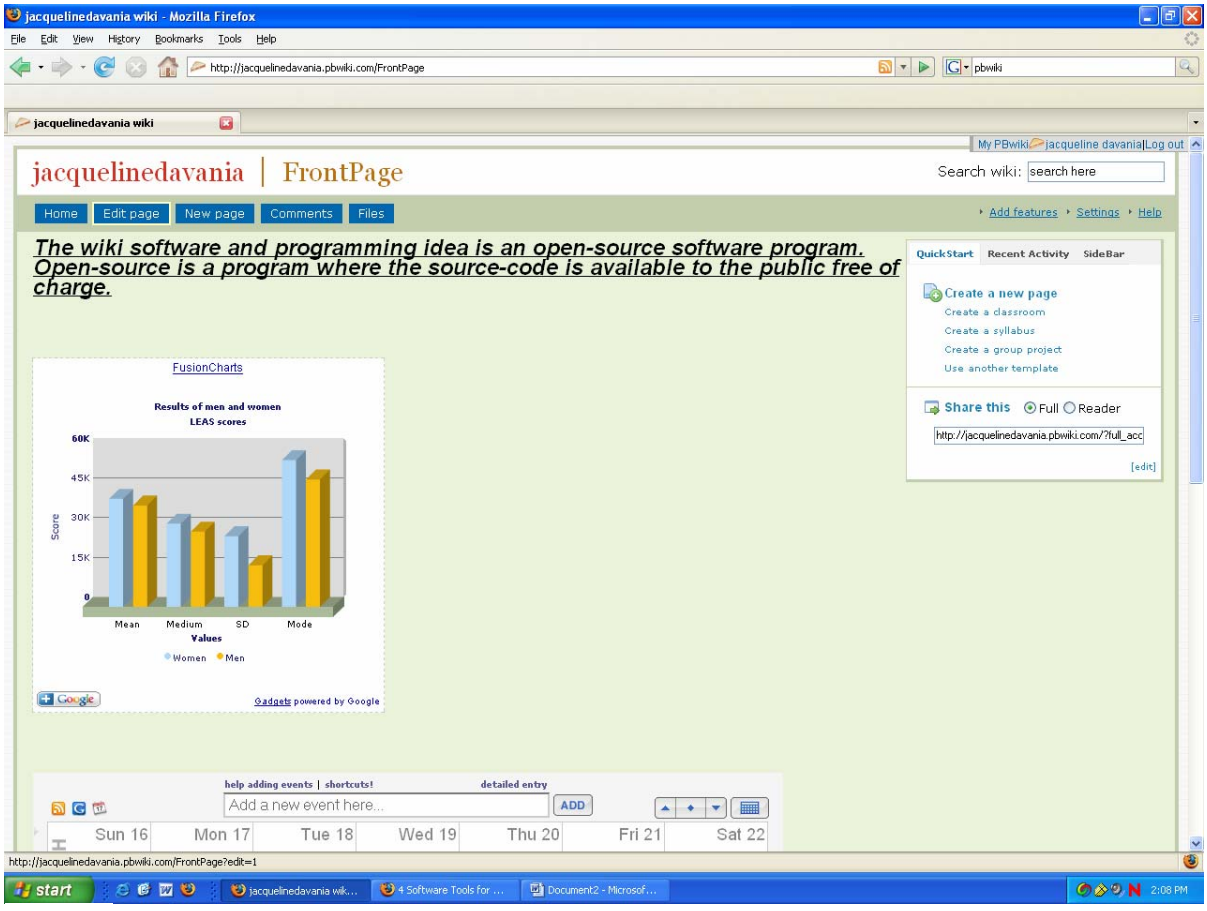

Figure 3
A Page in PBwiki

What a Wiki Looks Like Through a Browser

Figure 3 shows a page in PBwiki. The layout is pretty simple. The main part of the screen shows the web page itself. This page contains some text, a chart, and here at the very bottom of the screen is a calendar. There wasn't room to show the whole calendar on a single screen shot, but if you scroll down on the webpage, you can see the entire calendar. At the top is the name of the web page. In this case, the page is called FrontPage to indicate that this is the first page in the wiki web site. There are menus that allow the user to save and edit the page and create new pages.

How to Edit a Wiki

To edit the wiki page, just click "Edit Page". Figure 4 shows what this same wiki page looks like in PBwiki when you are editing it. In this case, the chart was a Google Add-in, and so when you are editing it, you cannot see the content of the chart itself. The calendar was a feature from PBwiki, and shows up as just the icon "Calendar".

When editing your page you can add and delete content such as pictures, tables, charts, and special features such as calendars. You can also add links to other wiki pages. Finally, you can format this material, changing alignment and layout as well as text font, size, and color. Thus, wiki pages have the basic formatting and editing features of a simple web site development program or a simple word processor. This is true of most free wiki programs, not just PBwiki. If users need more advanced features, they can pay for advanced features on PBwiki or one of the other wiki programs.

When you have finished editing the page, just click "Save" at the bottom of the screen.

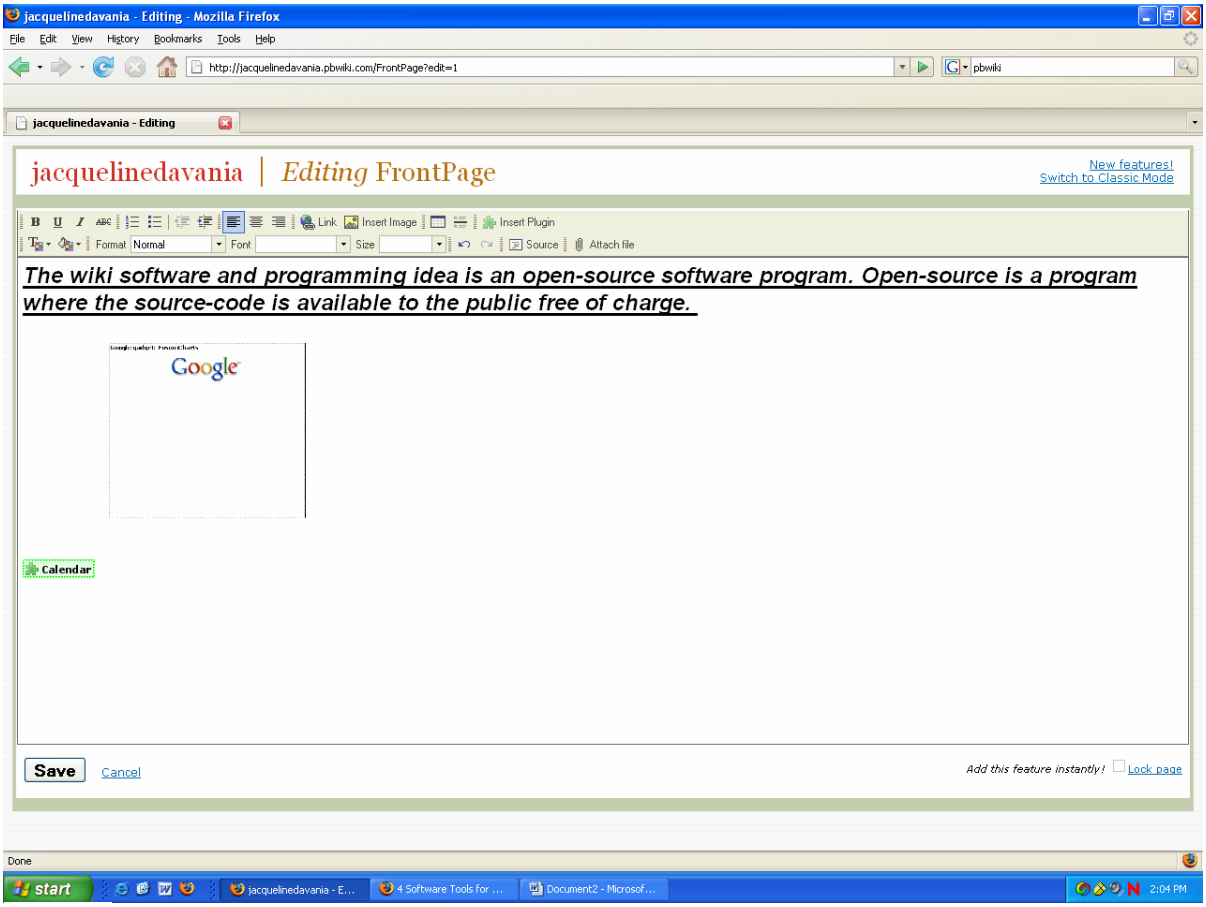

Figure 4
Editing a page in PBwiki

Can be used to Organize the Project

As we mentioned before, wiki pages can be used to organize the project. Figure 5 shows a wiki page that is designed to organize work on a project. This page lists members of the group and their contact information, as well as important sources for this project. This page also helps members keep track of meetings.

There are other things that could be added to this page, to help the collaborators organize the project. For example, they could keep a list of drafts of the project. They could create a calendar that lists important dates and deadlines. They could talk about the purpose of the project and where it is headed. Of course, all of this information could be shared by email instead. But the advantage of sharing it using a wiki page is that all the information is given in one location. When authors go to find this information, it is easy to locate, and they are confident that they have the current version of the information.

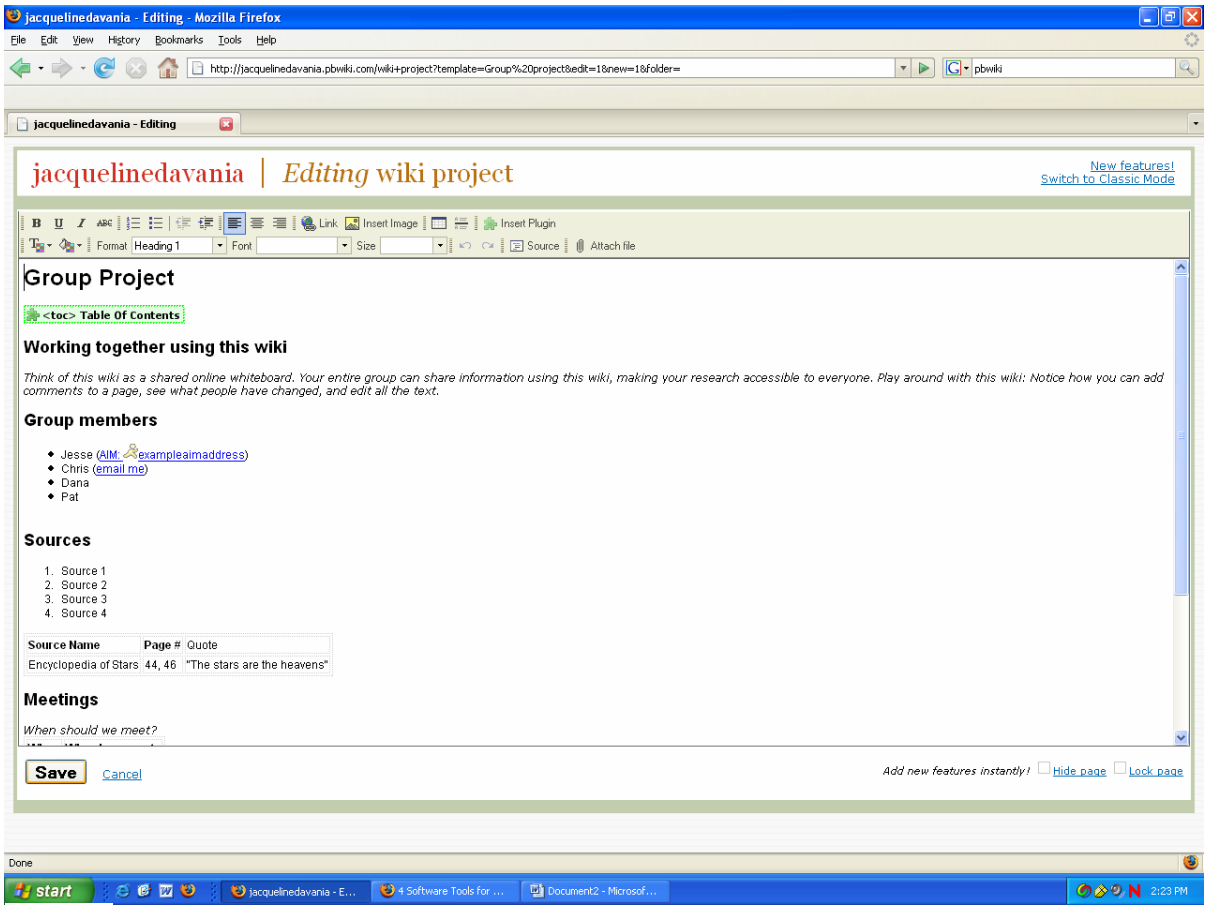

Figure 5
Organizing a Project

Challenges with using Wikis

Most researchers are used to creating their documents using word processors such as Microsoft Word. If they switch to using wikis, there are a few challenges they will face. We would like to briefly address those, so that your first attempts do not lead to frustration.

Backup

Because the original files are stored on the Internet, you need to back the files up. Many wiki programs have backup features, but these may not be free. You can easily back up the content of the wikis by saving them to your own computer occasionally.

Storage space
Wikis have limited amounts of free storage space. You may need to pay for extra storage space if you are working on a big project. You can also create multiple wikis, but that may make it harder to keep your materials organized.

Basic formatting
Free wikis only allow basic formatting. If you want more complex formatting, consider paying for a wiki, or consider using the wiki to create the content of the document and then formatting the document afterwards in a regular word processor such as Microsoft Word.

Summary
In summary, Wikis are a free, powerful tool that can help researchers write collaboratively. They can be used both to write the research paper and to organize the data collection and writing. Both students and faculty are likely to use them more in the future for both research and class projects.

Google Docs

Google Docs is another useful tool for collaborative writing. Like a wiki, researchers put their files on the Internet, rather than storing them on their individual computers. The big difference between a wiki and Google Docs is that wikis are web pages, whereas Google Docs allows three different file types: documents, spreadsheets, and presentations.

Part 1: Features
Google Docs has a number of features that make it helpful for collaborative writing.

Features Google Docs Shares with Wikis
Free
It is free. This increases the range of people who can use this program.

Easy to Use
It is easy to use. It is easy to create a new account: you just need an email address. It is easy to create new files: just click New Document. It is easy to upload an existing file: just click the upload button. And if you get confused there is online help.

Web-based
The Google Docs files are stored directly on the web. This increases who you can work with and where they can work.

Platform Independent
Google Docs is platform independent. Because Google Docs is accessed through the Internet, the files that are on Google Docs can be accessed using any computer, with any operating system.

Simultaneous Editing
One of the most powerful features of Google Docs is simultaneous editing. In traditional collaborations, only one person can work on the file at a time. Typically, one person works on the file for a few days and then emails it to the other person. The first person must wait until the second person is finished and returns the file, before they are able to work on it again. This interrupts the writing and creative process, and sometimes allows one author to hold a paper hostage, through lack of response.

Wikis and other collaborative writing programs are better, because all authors have access to the files at all times. However, in most Wikis and other collaborative writing programs, the file becomes locked for editing if someone else is working on it. Google Docs allows multiple people to work on the same file at one time, allowing for faster productivity and easier collaboration.

In addition, simultaneous editing shows real time changes being made to the documents. Two or more people can be working on a file at once, and literally see each other type. This allows them to build upon what each other is doing. The collaborators can add another form of communication, such as phone, instant messaging, or web cams and microphones. This allows for more efficient collaborative writing. We used this method of collaborative writing on this symposium. When some team members left the state for winter holidays, we arranged phone-plus-Google Docs appointments. One person typed in the file while we talked about the changes we were making. This made it very easy to clearly communicate about the changes we were making, was very efficient, and was also fun.

Multiple Levels of Access

Google Docs allows you to designate who can view each of your files and who can edit each of them. For each project, you can share some files with your collaborators and keep others private, and for different projects you can share your files with a different set of collaborators.

Unique Features

There are also several features that are unique to Google Docs, that wikis don't have.

Allows Text Documents, Spreadsheets, Presentations

Google Docs allows a wider variety of formats than wikis do. You can create new text documents, spreadsheets, and presentations directly in Google Docs. You can also upload existing files from Microsoft Word, Excel, and PowerPoint, or other programs.

Can Save in a Variety of Formats

When you download the files onto your computer, Google Docs can save the files in a variety of formats. Some of these include HTML, Word, RTF, PDF or Text files. Being able to save files in a variety of formats makes it much easier to adapt the files to the software that each collaborator has. If one collaborator has Microsoft Word, they can download in Word format. If another has Microsoft Works, they can download in Rich Text Format, which is easily read by all word processors.

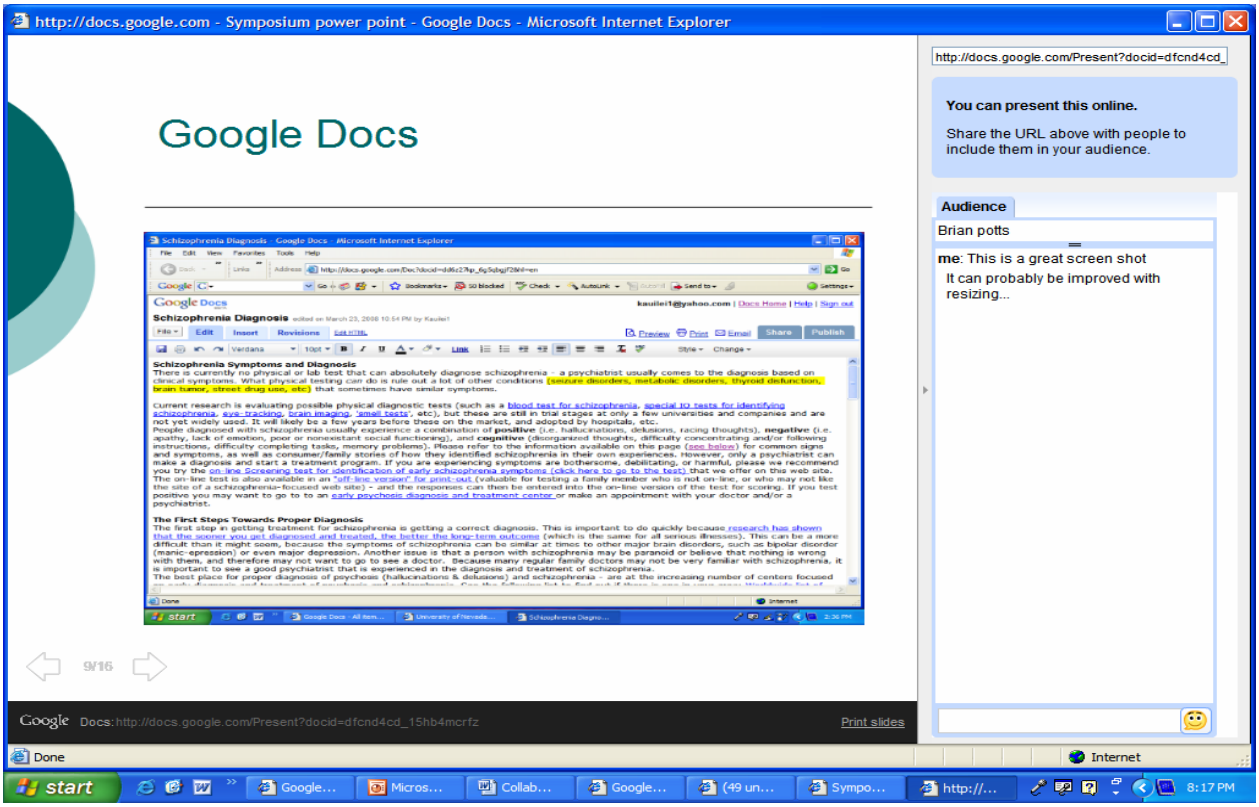

Figure 6
Real Time Presentations

Real Time Presentations

Real Time Presentations allow multiple people to watch a presentation at the same time through the Internet. While they are watching, they can type comments in a chat room on the right hand side of the screen.

Real Time Presentations can be used in two ways. First, they can be used to actually give the presentation. Everyone who wants to see the presentation can sign onto Google Docs, and can watch the presentation simultaneously. If an audience member has a question, they can type it into the chat room.

As well, if we had an Internet connection in this room, we could be giving our presentation today using the Real Time Presentations feature. You would be able to see the presentation on the screen. We could minimize the chat room, so it didn't take up any space on the screen.

Second, Real Time Presentations can be used during the writing process. Co-authors can watch the presentation together, and make comments and suggestions in the chat room. They can then modify the presentation and try it again. See Figure 6.

Part 2: What Google Docs looks like

Google Docs Interface

Figure 7, shows what the Google Docs interface looks like. The file names are located in the middle of the screen. There is an icon on the left of the file name indicating what kind of file it is. Documents have a blue icon. Presentations have an orange icon. Spreadsheets have a green icon.

The next column is the folders/sharing column. First, Google Docs tells you what folder the file is in. In Figure 7, there are two folders: Schizophrenia and Collaboration Symposium. Second, it shows who you are sharing each files with. In Figure 7, the first file is shared with Christopher and Jack. The third file is shared with Jacqueline. This means that Christopher and Jack can see the first file but they cannot see the third file.

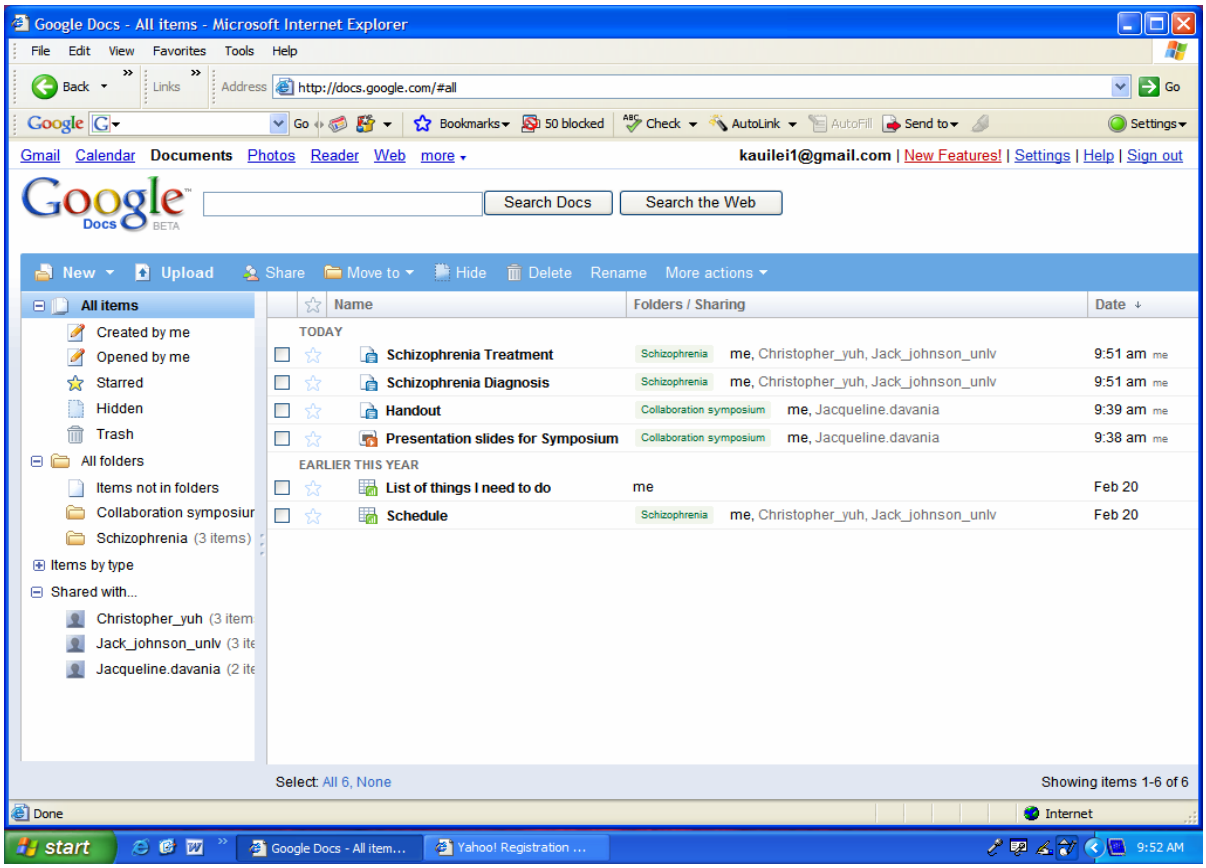

Figure 7
Google Docs Interface

The next column shows the date shows when the file was last edited and by whom. In Figure 7, I was the last person to edit each of these files. It gives the date when I did the editing, or if I edited it today, the time when I edited it. But if someone else had been the last person to edit these files, it would list their name here rather than mine.

Google Docs Document

In Figure 8, you can see that the Google Docs document has all of the basic features of a word processor. You are able to highlight, change your font, insert pictures, etc. You can also export the file onto your computer as a PDF, Word, Office, RDF, HTML, or as text back onto your computer making any files you create on Google Docs compatible to most computer types.

Figure 6 above showed what the Real Time presentation looked like.

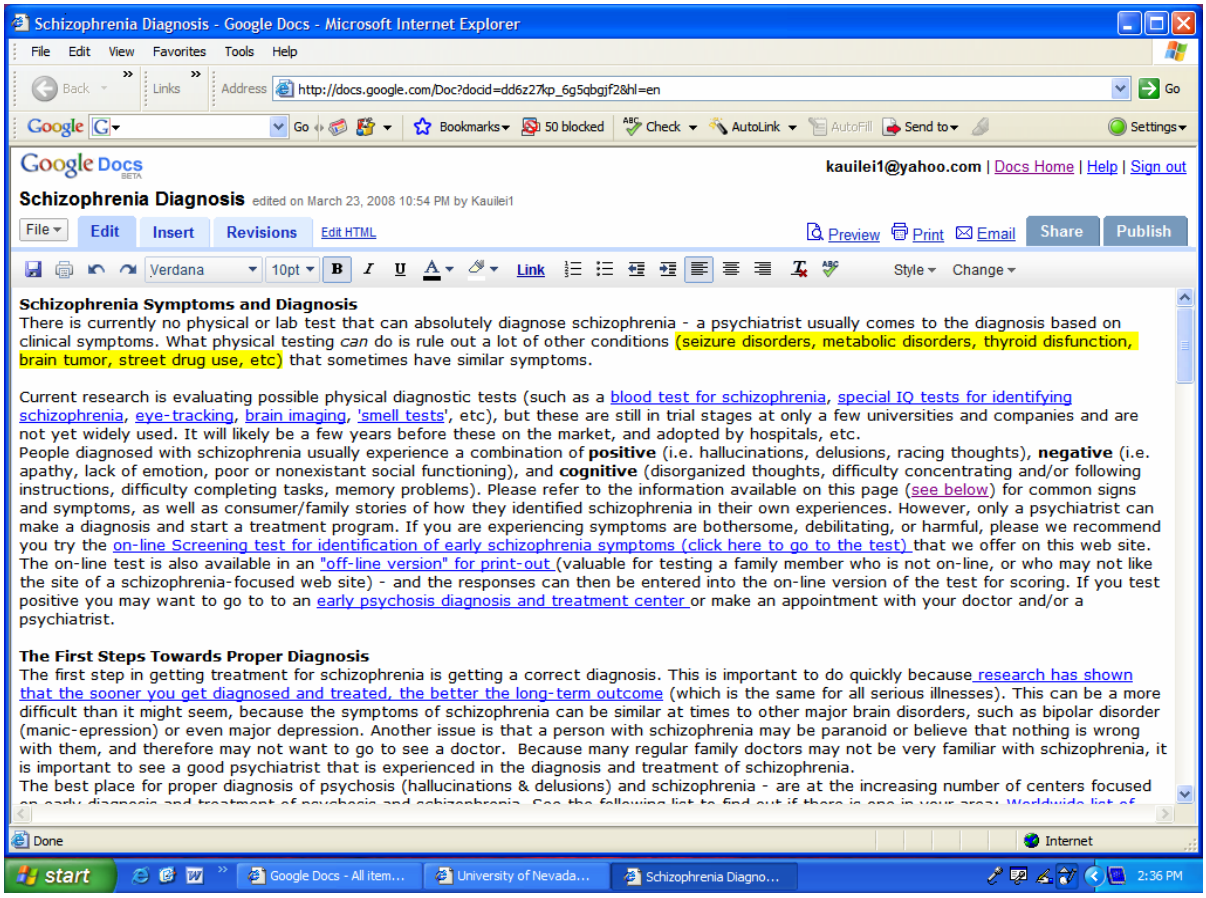

Figure 8
Google Doc Document

Part 3: Challenges with using Google Docs

If researchers start using Google Docs, there are a few challenges they will face. We would like to briefly address those, so that your first attempts do not lead to frustration.

Backup

Because the original files are stored on the Internet, you need to back those up. If you don't, then if one of your co-authors makes changes you don't like or deletes important information, it will be lost. You can easily back up the content of the Google Docs by downloading the files periodically.

File limitations

Google Docs provides relatively generous file size limits. For example, documents can be up to 500K, and you can have up to 5000 documents and presentations. 500K is large enough for moderate sized journal articles, but would not be large enough for a project like a book. For larger projects, you should divide your documents into

multiple documents. For example, if you are writing a book, you could make each chapter a separate document. If you are likely to exceed the 5000 documents and presentation limit, you could have several of the collaborators create some of the documents, and then share them with each other, rather than having one person create all documents.

Basic formatting

Google Docs only allow basic formatting, although the formatting options have been increasing over time and are likely to continue to increase. For this project, we found the basic formatting somewhat frustrating. Therefore, we recommend that you use Google Docs to create the basic content of the documents, and then do the final formatting in a more flexible word processing program, such as Microsoft Word.

Not fully integrated with PowerPoint

At this point, Google Docs is not fully integrated with PowerPoint. You can upload a PowerPoint document into Google Docs, and you can run your presentation directly in PowerPoint. But if you want to download your presentation, you cannot download it into PowerPoint format. You have the option of downloading it into pdf format or text format. What this means is that you cannot use PowerPoint to edit or present a document that you downloaded from Google Docs. Therefore, at this time we recommend that you decide if you will present the final presentation in PowerPoint or Google Docs. If you will present it in Google Docs, then you can create the entire presentation in Google Docs. But if you will present it in PowerPoint, we recommend you create the presentation in PowerPoint, and only use Google Docs to share the presentation with others, and perhaps ask for feedback. If you want others to help edit the presentation, email them the original PowerPoint file. We are hoping that in the near future, Google Docs will make it possible to download into PowerPoint format, but until this is possible, the presentation format is not as useful as the documents format, which can already been downloaded in a variety of file formats.

Summary on Google Docs

Google Docs is another powerful, free tool for collaborative writing. It has all the features of wikis and also several unique features. We used Google Docs during the beginning stages of this symposium. We used it in two ways. First, we used it to organize the symposium work. For example, we shared pictures and backgrounds to create a sense of community, compared work schedules, and used it to decide who would work on which presentation. We also used it for the first drafts of each presentation. Near the end of the preparation, we moved the documents in Microsoft Word and moved the presentations into PowerPoint, to facilitate formatting. We then emailed those documents back and forth. Although that did help us with the formatting, we also missed the convenience of having all the documents in one place, where they could be simultaneously edited.

Conclusion

This presentation has discussed four tools that can help researchers collaborate when writing. These tools help researchers write together, and also help them more clearly communicate about their writing. This increases efficiency and thus encourages researchers to collaborate more often.