

Google Docs

Can we finally go paperless?

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Some background info



Appropriate
technologies in
class



Experimentation and surveys

Disclaimer

I've not used Avenue's Dropbox feature, so I cannot do a fair compare and contrast

How I use Google Docs in my classes

Used in 4 courses : one 3rd year course and three 4th year courses

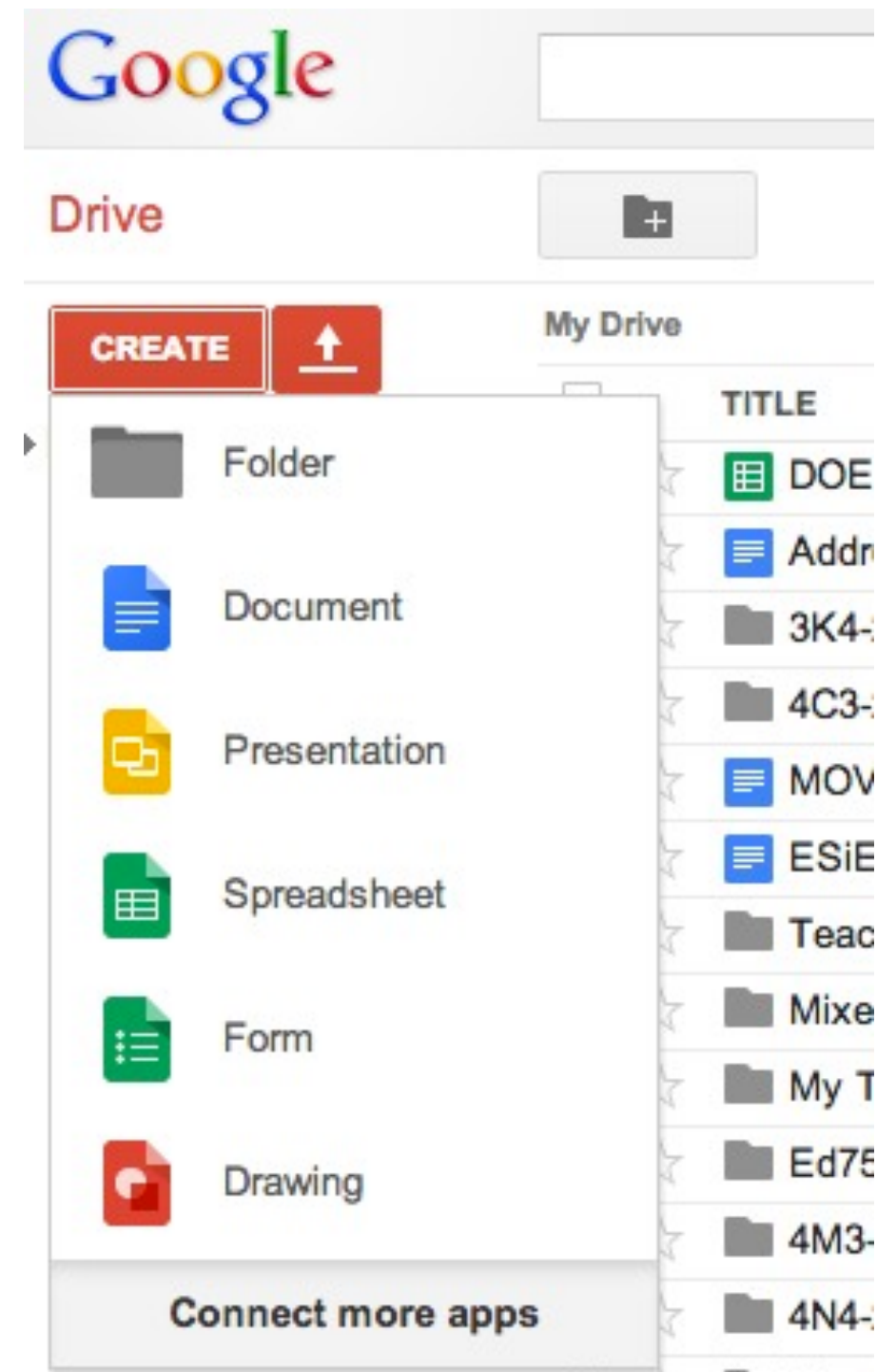
Department of Chemical Engineering

Most assignments, all projects as well as intermediate project proposals

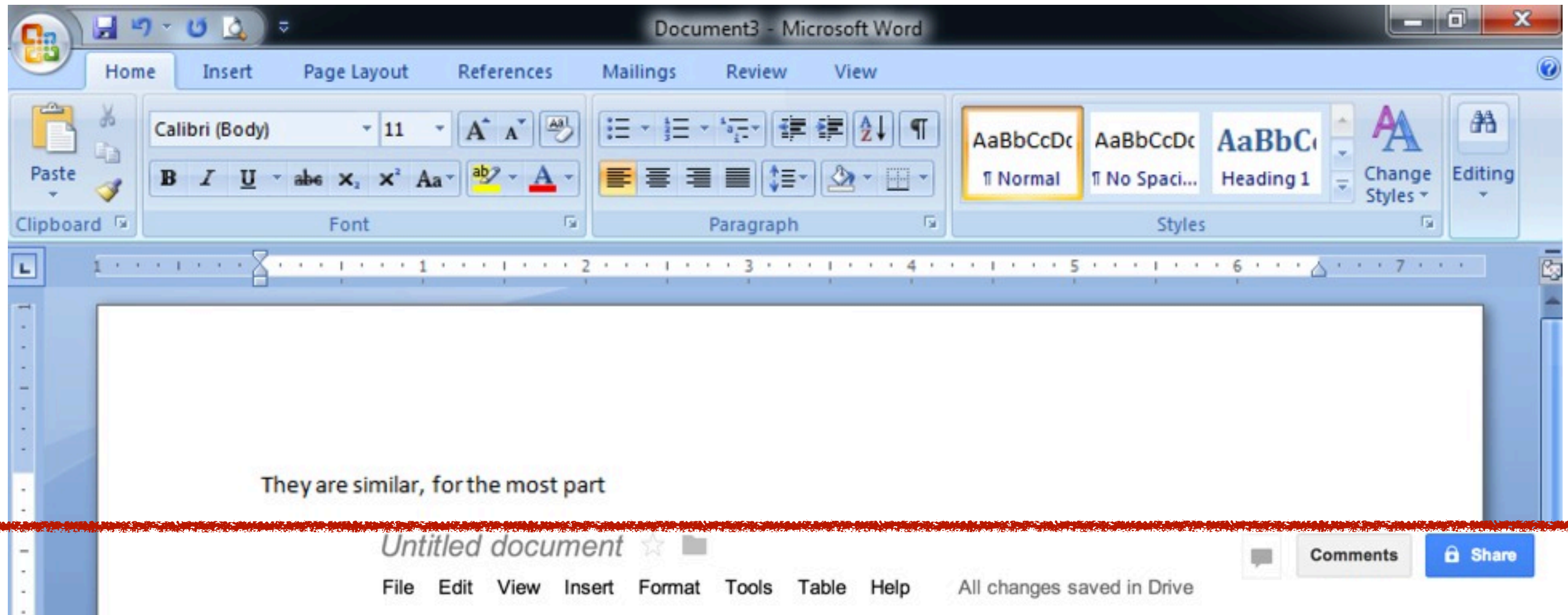
More details about ~~GoogleDocs~~ Google Drive

Loosely speaking ...

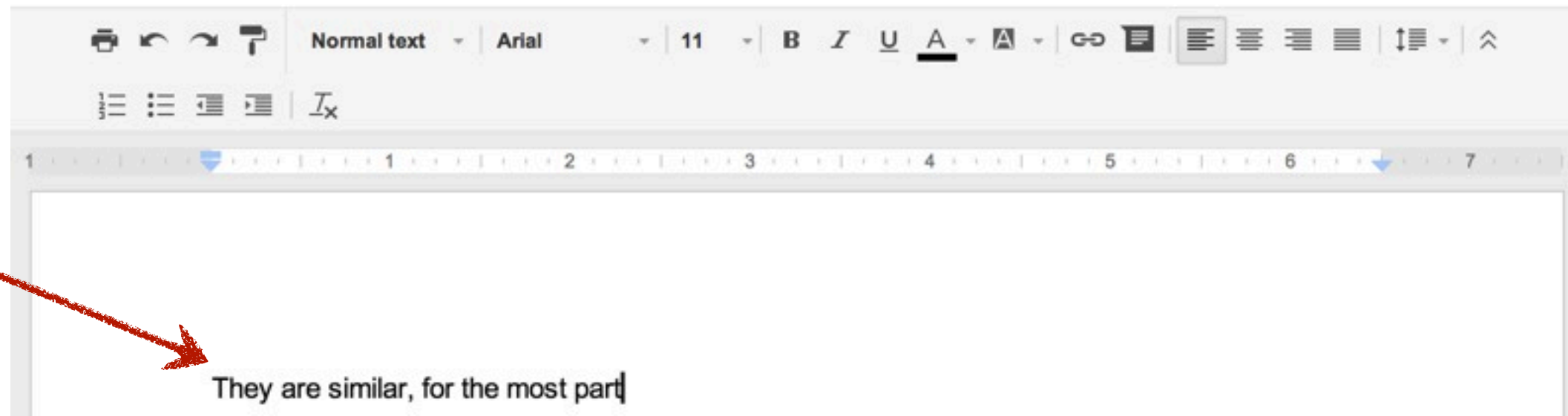
It's an online equivalent
of Microsoft's Office suite



Word vs “Document”



Document
area



The student's view

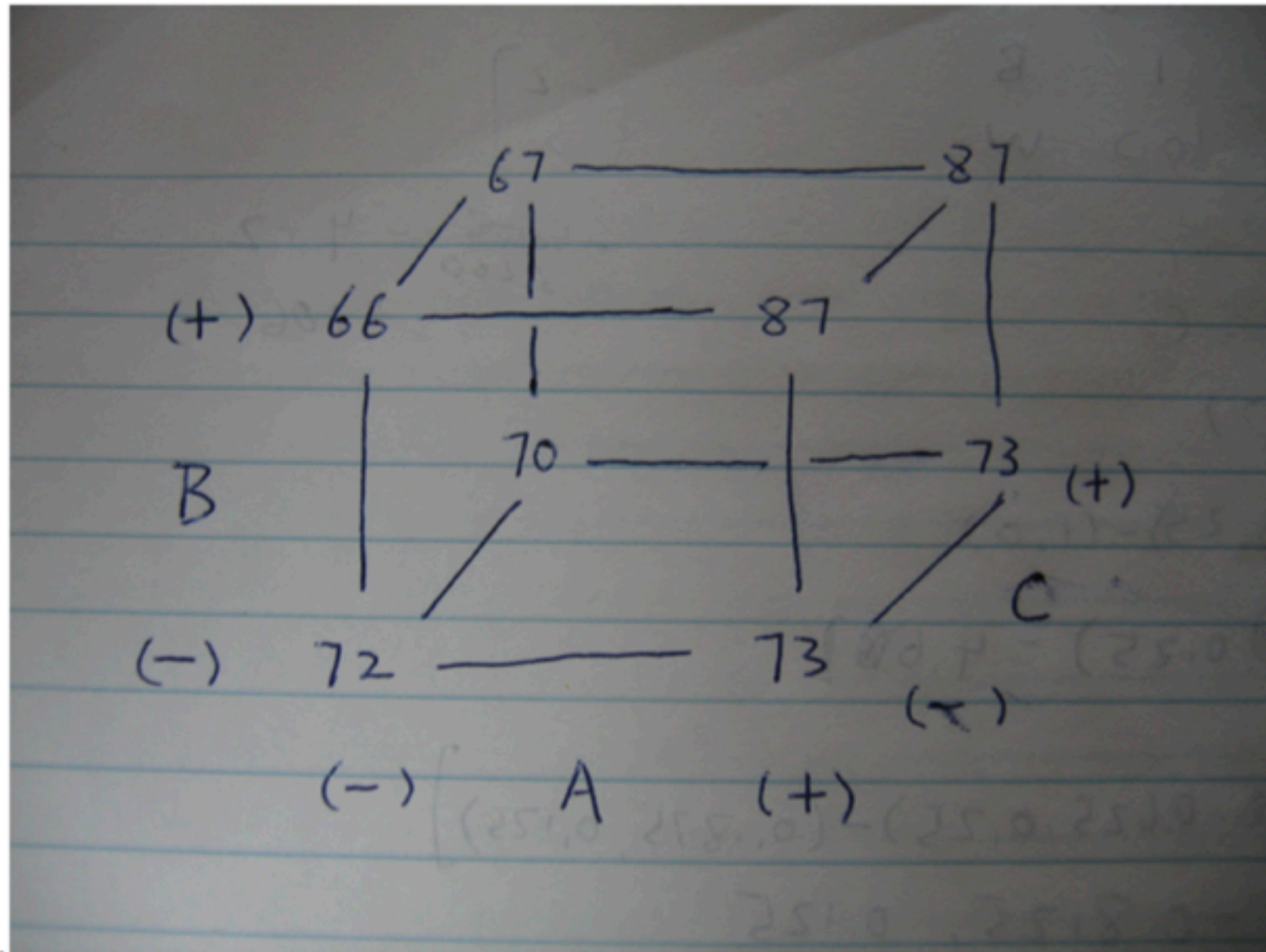
The screenshot shows a web browser window with the Google Drive interface. The top navigation bar includes links to Kevin, Search, Images, Maps, Play, YouTube, News, Gmail, Drive, Calendar, and More. The Google logo is on the left, and the user's name 'Kevin Dunn' is on the right. The Drive interface has a left sidebar with 'My Drive', 'Shared with me', 'Starred', 'Recent', and 'More'. The main area displays a table of files in 'My Drive'.

<input type="checkbox"/>	TITLE	OWNER	LAST MODIFIED
<input type="checkbox"/>	Mixed	me	10:41 am me
<input type="checkbox"/>	3K4-2013	me	Apr 26 me
<input type="checkbox"/>	4C3-2013	me	Apr 26 me
<input type="checkbox"/>	Teaching	me	Apr 4 me
<input type="checkbox"/>	My Tracks	me	Mar 14 me
<input type="checkbox"/>	Ed750	me	Jan 29 me
<input type="checkbox"/>	4M3-2012	me	12/31/12 me
<input type="checkbox"/>	4N4-2012	me	12/31/12 me

At the bottom left, a storage status bar indicates '26% full' and provides a link to 'Upgrade storage'.

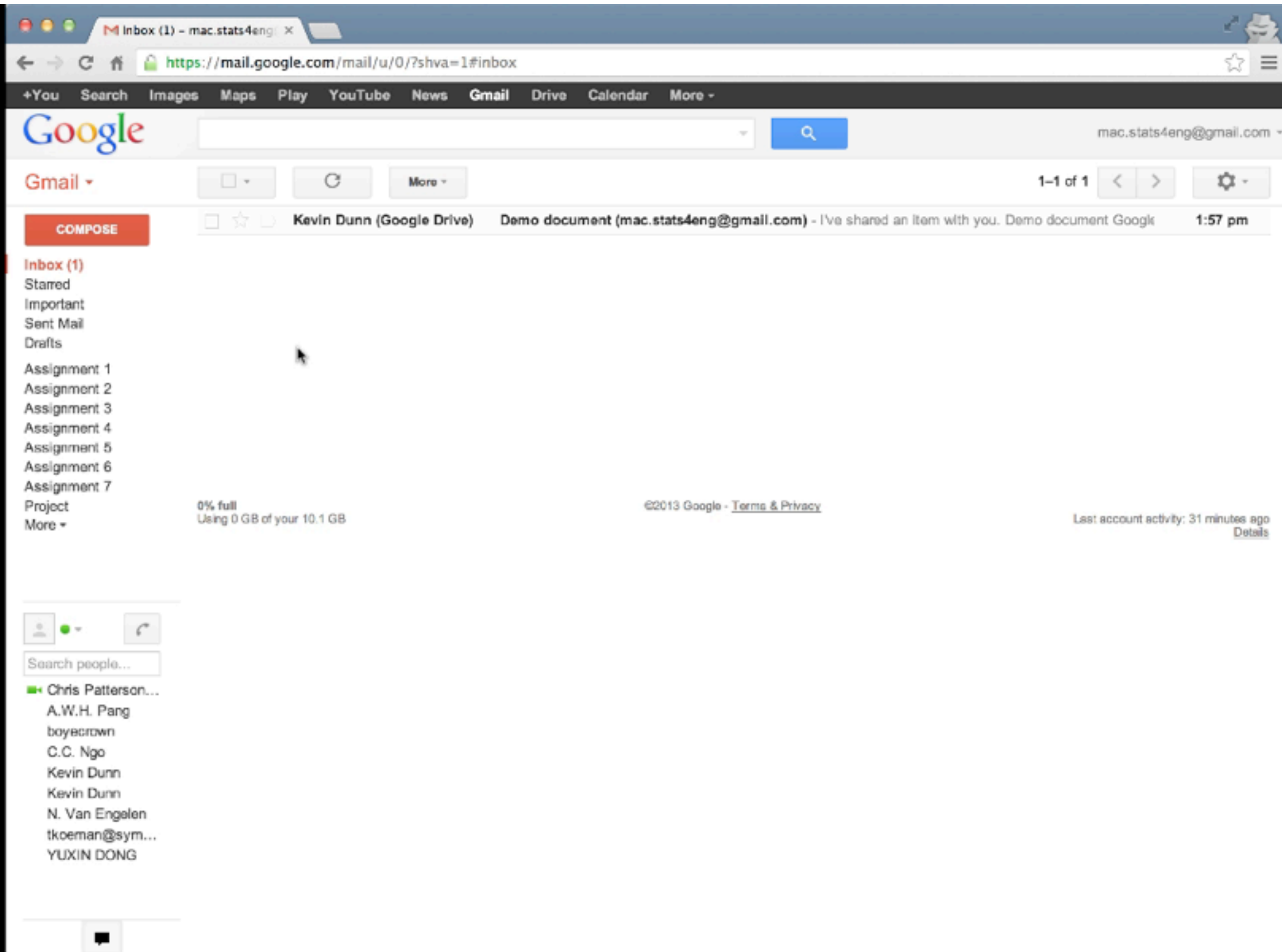
Not everything is easy electronically

Question 1



Scanned inserts and cellphone camera pics are quite common in submissions

Instructor and TA grading



Student opinions about using Google Drive

“Would you use Google Docs again?” (or similar question)

- 65 to 70 % had positive experiences using it
- Based on the general sentiment of their reply
- Surveyed ~150 unique students over 4 courses

Student opinions about using Google Drive

Those with negative experiences almost always cited “formatting issues” as their reason

- Equations
- Tables and spreadsheet inserts

Those with negative experiences will influence others.

Pros of Google Drive

Pros of Google Drive



- Paperless. Sustainable.
- Students can write document anywhere
- Instructor and TA can grade from anywhere: not carrying papers around
- Students appreciate the collaborative chats & comments – for group assignments and projects
- Cross-platform: any browser, and computer type

Pros of Google Drive

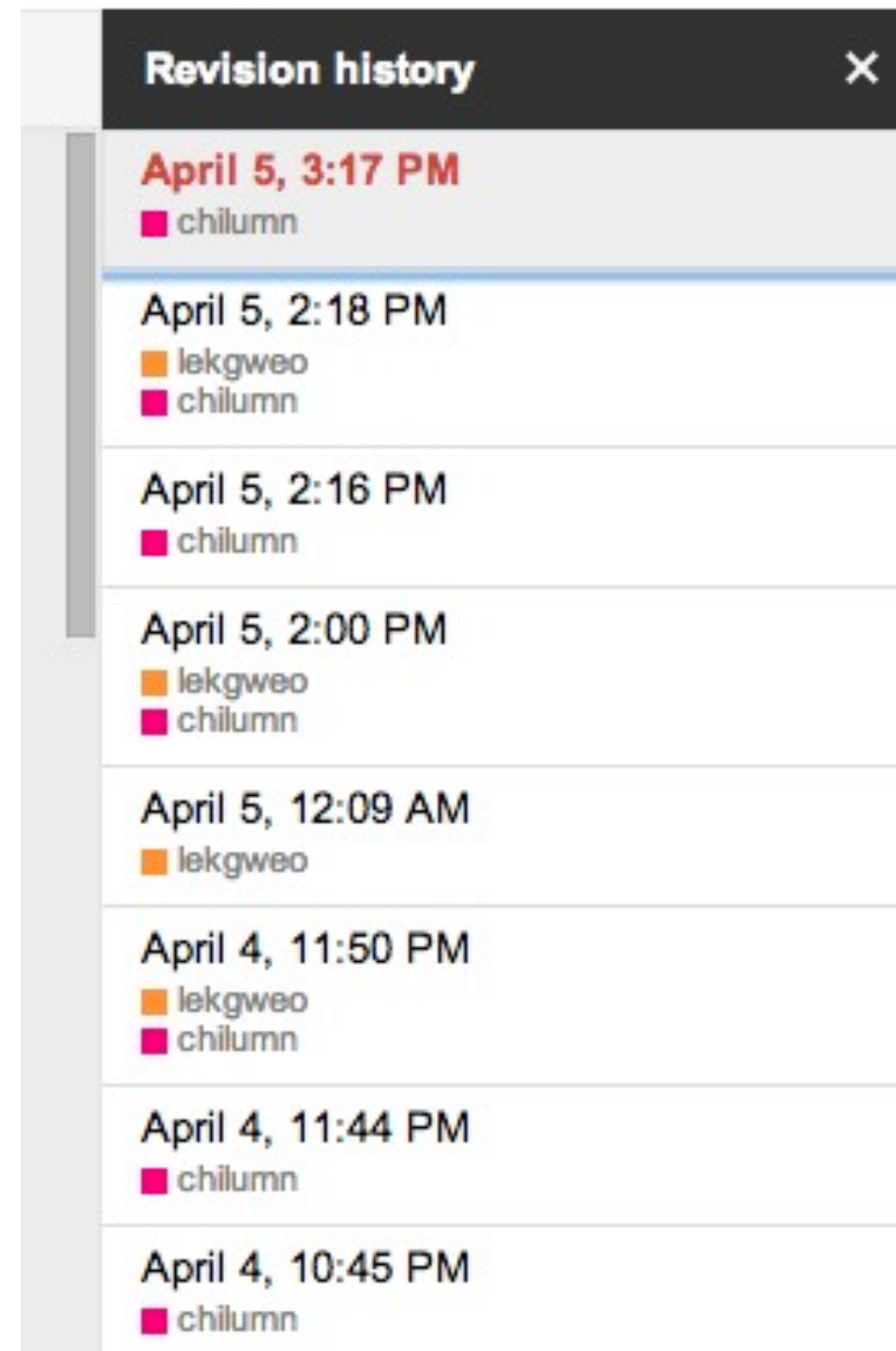
- No need to email documents among group members
- Autosaves the documents as you type
- Unlimited revision history is available:
 - ▶ revert back to any point in time
 - ▶ can potentially help with academic integrity cases
- Free – no license required

Pros of Google Drive

- Student doesn't need to come in person for hand-in or pickup.
- Students can retain the material: upload it to a portfolio, etc
- Export to Word, PDF, OpenOffice, HTML or text formats
- Reduces my office hours: Q and A about grading can be done electronically.

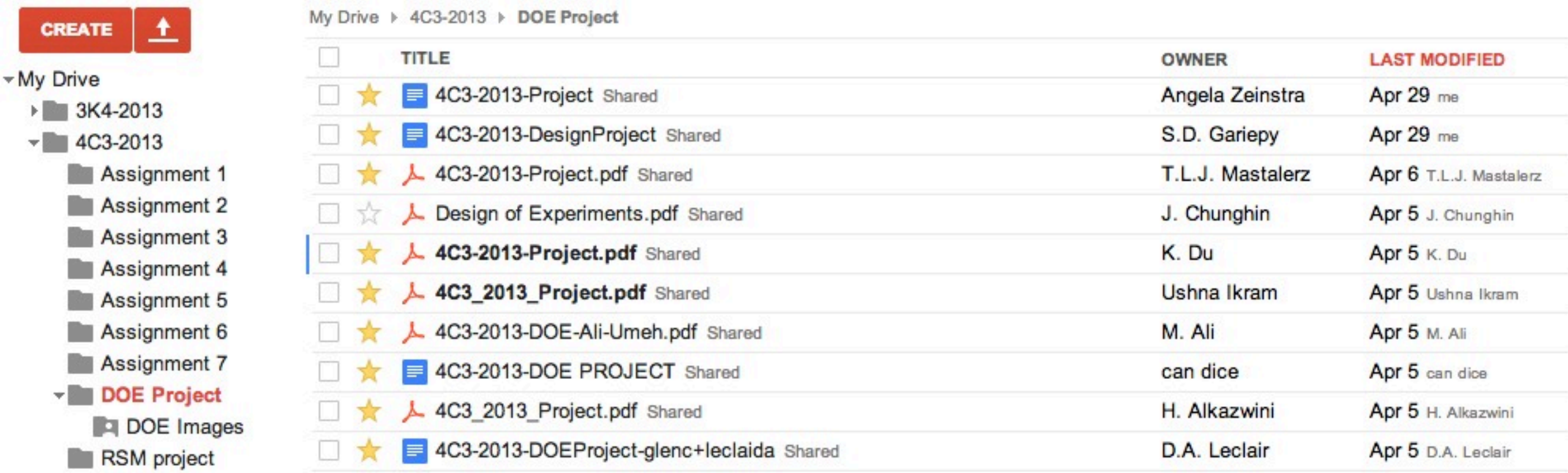
Cons of Google Drive

- Slow/no internet is obviously a major concern
- Keyboard shortcuts are different to Word
- Resistance to change (especially at 4th year level)
- Files can be revised after deadline
 - ▶ by student
 - ▶ by instructor/TA



Cons of Google Drive

- Different page views in different browsers
 - e.g. a 4 page limit becomes fuzzy
- Messy to deal with many assignments in large classes
 - use “stars” and “bold text” to help you though
 - sort by **LAST MODIFIED** or use hierarchies



The screenshot shows the Google Drive interface. On the left, a sidebar displays a folder hierarchy under 'My Drive': '3K4-2013', '4C3-2013' (expanded), and 'DOE Project' (selected). The 'DOE Project' folder contains 'DOE Images' and 'RSM project'. The main area shows a list of files within the 'DOE Project' folder, sorted by 'LAST MODIFIED'. The files are listed with checkboxes, star icons, document icons, titles, owners, and modification dates.

	TITLE	OWNER	LAST MODIFIED
<input type="checkbox"/>	★ 4C3-2013-Project Shared	Angela Zeinstra	Apr 29 me
<input type="checkbox"/>	★ 4C3-2013-DesignProject Shared	S.D. Gariepy	Apr 29 me
<input type="checkbox"/>	★ 4C3-2013-Project.pdf Shared	T.L.J. Mastalerz	Apr 6 T.L.J. Mastalerz
<input type="checkbox"/>	☆ Design of Experiments.pdf Shared	J. Chunghin	Apr 5 J. Chunghin
<input type="checkbox"/>	★ 4C3-2013-Project.pdf Shared	K. Du	Apr 5 K. Du
<input type="checkbox"/>	★ 4C3_2013_Project.pdf Shared	Ushna Ikram	Apr 5 Ushna Ikram
<input type="checkbox"/>	★ 4C3-2013-DOE-Ali-Umeh.pdf Shared	M. Ali	Apr 5 M. Ali
<input type="checkbox"/>	★ 4C3-2013-DOE PROJECT Shared	can dice	Apr 5 can dice
<input type="checkbox"/>	★ 4C3_2013_Project.pdf Shared	H. Alkazwini	Apr 5 H. Alkazwini
<input type="checkbox"/>	★ 4C3-2013-DOEProject-glenc+leclaida Shared	D.A. Leclair	Apr 5 D.A. Leclair

Dealing with many submissions: hierarchy

The screenshot shows the Google Drive web interface. On the left, a sidebar displays a hierarchical folder structure under 'My Drive', including folders for '3K4-2013', '4C3-2013' (with sub-folders 'Assignment 1' through 'Assignment 7', 'DOE Project', and 'RSM project'), '4M3-2012', '4N4-2012', 'Ed750', 'Mixed', 'My Tracks', and 'Teaching'. Below this is a 'Shared with me' section. The main area shows a list of files shared with the user, sorted by date. Each row includes a checkbox, a star icon, a document icon, the file title, the owner's profile picture, and the share date. The file '4C3-2013-Assignment-6' is highlighted in yellow. The bottom of the screen shows a browser address bar with a Google Docs link.

TITLE	SHARE DATE
2013-4C3-Assignment-07-Yuan Assignment 7	X. Yuan Mar 30
4C3 - DOE - Final Report.pdf DOE Project	Viktoriya Todorova Mar 30
4C3-2013-Assignment-6-Vilcu-Camellia.pdf My Drive	Amy V Mar 19
4C3-2013-Assignment-06-code.pdf My Drive	JT Koeman Mar 18
4C3-Project Proposal-Siddiqui-Daca DOE Project	Laila Siddiqui Mar 18
2013-4C3-Assignment-06-Johnstone My Drive	Sean Johnstone Mar 17
4C3-2013-Assignment-06 My Drive	Jamie Chung-Hin Mar 15
4C3-2013-Assignment-06-Bovell My Drive	A.D. Bovell Mar 15
4C03-2013-Assignment-06.pdf My Drive	Tyler Homer Mar 15
4C03-2013-Assignment-6.pdf My Drive	T.L.J. Mastalerz Mar 15
4C3_2013_Assignment6_Mohamad.pdf My Drive	M.M. Mohamad Mar 15
4C3-2013-Assignment-6 My Drive	R. Fisseha Mar 15
4C3-2013-Assignment-6 My Drive	S.D. Garlepy Mar 15
4C3-2013-Assignment-06 My Drive	Braden Armstrong Mar 15
4C3-2013-Assignment-06.pdf My Drive	M. Ali Mar 15
4C3-2013-Assignment-6.pdf My Drive	F. Anwar Mar 15
2013-6C3-Assignment-06 My Drive	AMIR KAZEMI Mar 15
6C3-2013-assignment-6.pdf My Drive	Zhangbo Gu Mar 15
4C3-2013-Assignment-6-0949188&0942755.pdf My Drive	Anastasiya Laktyushkina Mar 15
4C3-2013-Assignment-06 My Drive	C.C. Ngo Mar 15
4C3-2013-Assignment-06.R My Drive	JT Koeman Mar 15
4C3-2013-Assignment-06.pdf My Drive	JT Koeman Mar 15
4C3-2013-Assignment-06 My Drive	C. Kyriacou Mar 15
4C3-2013-Assignment-06 My Drive	A.K. Khanfar Mar 15
4C3-2013-Assignment-6-Anderson Pang 0953378 Ajay Govind 0952256.pdf My Drive	A.G. Harigovind Mar 15
	Giancarlo DA Mar 15

Cons of Google Drive

- Paper grading obviously has more flexibility with **how** you do it
 - ▶ constrained to the Google comment boxes
 - ▶ though you can highlight the problematic region
 - Does not have integration with Avenue (e.g. grade book, Turnitin)
 - Biggest issue with the negative sentiment group was formatting
 - ▶ tables
 - ▶ equations
 - ▶ figure captions ... all these are typical in engineering docs
 - Importing an existing Word document is not flawless
 - ▶ rather start from scratch in Google Drive
- or compromise ...

Non-native Google Docs are harder to comment on

4C3-2013- Assignment 3.pdf ☆

File Edit View Help

mac.stats4eng@gmail.com

Comments Share

February 4th, 2013

Chemical Engineering 4C03 -

Question 1

1. When looking at the results, one might mistake in the first 2 days, by showing a slightly higher Catalyst B is better by a larger amount. This is since the testing is done in paired tests, with a present may be due to batch impurities or previously. The Catalysts may able be influencing
2. The experiments must be run in randomized order

Experiment	Catalyst
13	B
14	A
15	A
16	B

4C3 Stats4eng

Add a comment

Notification settings

1:45 PM Feb 14

4C3 Stats4eng

Que 1 : $2 + 2 + 4 + 4 = 12 / 12$
Que 2 : $6 / 16$
Que 3 : $2 / 8$
Que 4 : $3 / 3$
Que 5 : $2 + 0 + 1 + 1 + 3 = 7 / 9$

Q2 : - 6 points (z values and its corresponding risk)
-2 point (Data plot)
-2 points here CI calculation is not helping directly to find similarity

Q3 : Paired test reply on calculating the difference in brittleness

Reply · Resolve

Reply to this comment...

Final comments

- Provide a video/tutorial to students on how to use Google Drive.
- Clear explanations for TAs on how to grade and markup the student's work.
- Allow students to also submit a PDF. Do not force the use of a native Google Doc.
- I eventually relented, and allowed paper submissions. Used by about 20% of the class.

Panel discussion