Facilitating collaboration in an online introductory astronomy laboratory

Bruce Palmquist
Central Washington U
Link to presentation:
http://goo.gl/aAOlAE

Outline for my presentation

- Forming groups
- Making and sharing templates
  - Everything is stored on my Google Drive
- Typical lab activity
- Peer assessment tool and method
- Plusses and minuses

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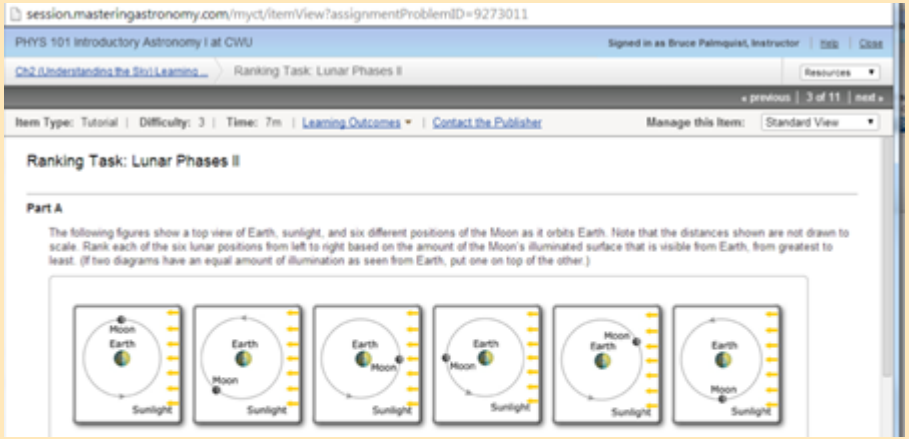
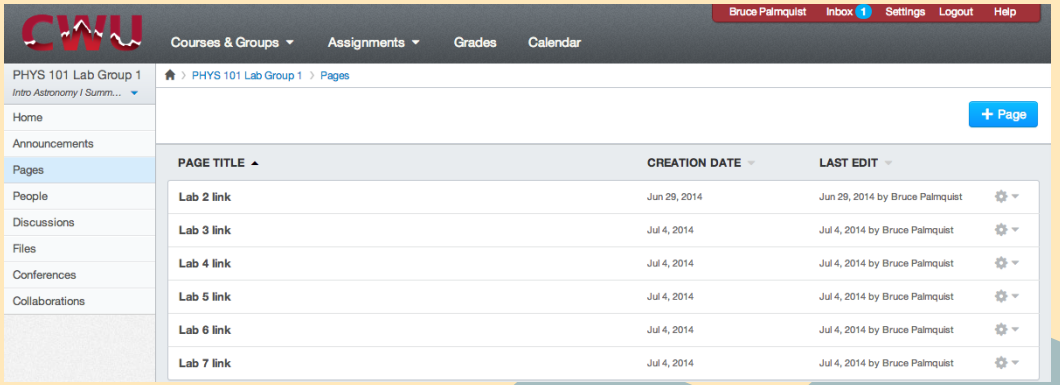
Forming groups

- Heterogeneous by ability. Based on...
- Astronomy concept test score
- Week 1 HW scores
- First lab score, done individually
- 3-4 people/group





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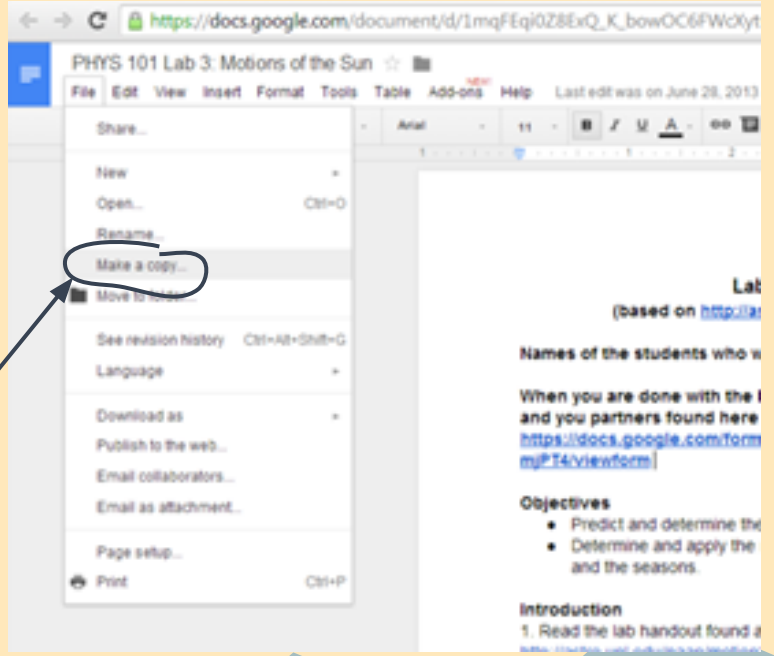
Making templates

- Write the lab in Google Docs or copy/paste from Word.
- Make a copy for each group. Under “File”, select “Make a copy”



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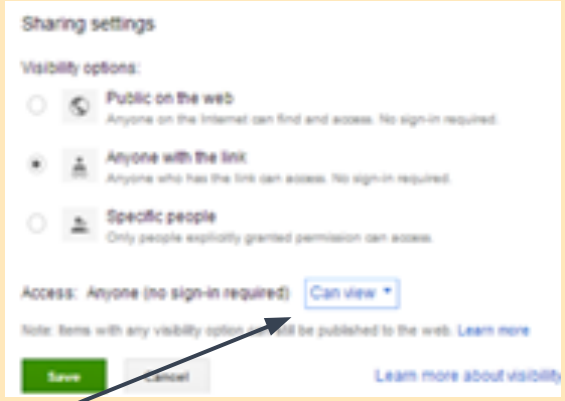
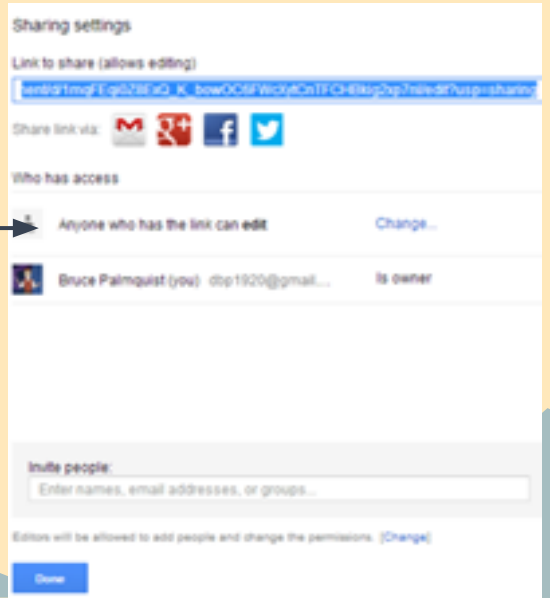
Sharing templates

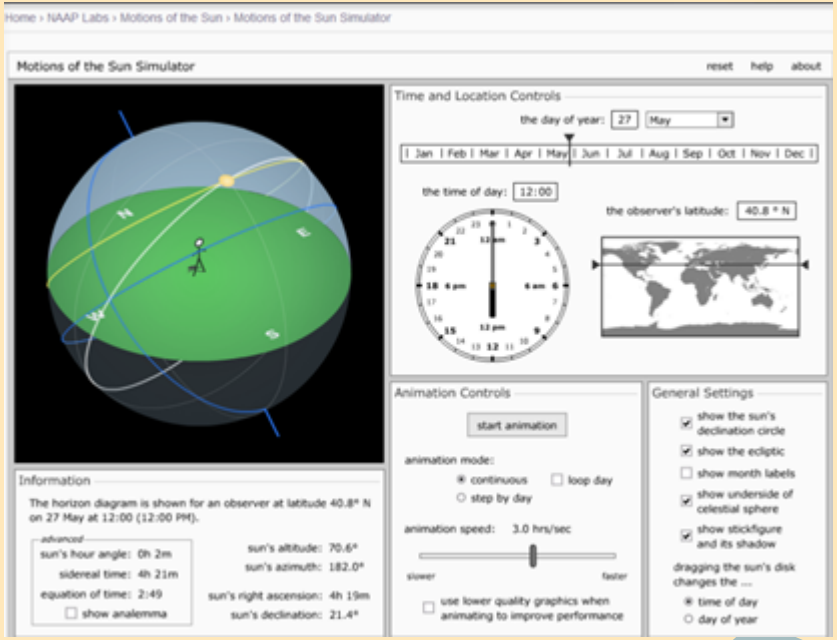
- Set sharing permission to “Anyone with the link can edit” before making the copy.
- Post each group’s link on Canvas





Typical lab activity

- Astronomy simulation from NAAP
- Motions of the Sun lab
- I go over the lab features in a Google+ Hangout (sample)
- Lab template



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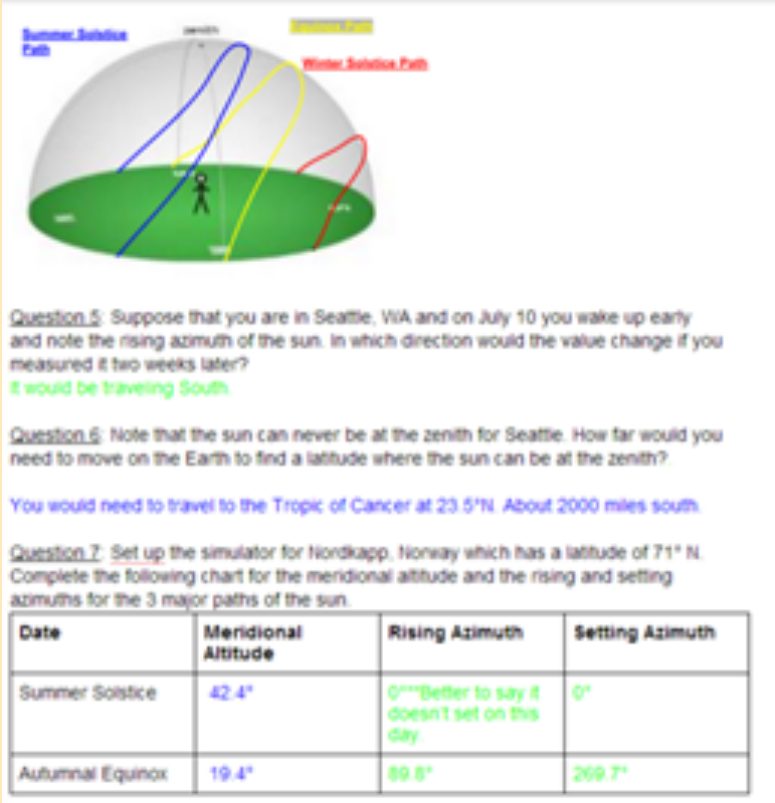
Typical lab activity

- After the lab is due, change the sharing from “Anyone with the link can **edit**” to “Anyone with the link can **view**”



Question 5: Suppose that you are in Seattle, WA and on July 10 you wake up early and note the rising azimuth of the sun. In which direction would the value change if you measured it two weeks later?
It would be traveling South

Question 6: Note that the sun can never be at the zenith for Seattle. How far would you need to move on the Earth to find a latitude where the sun can be at the zenith?

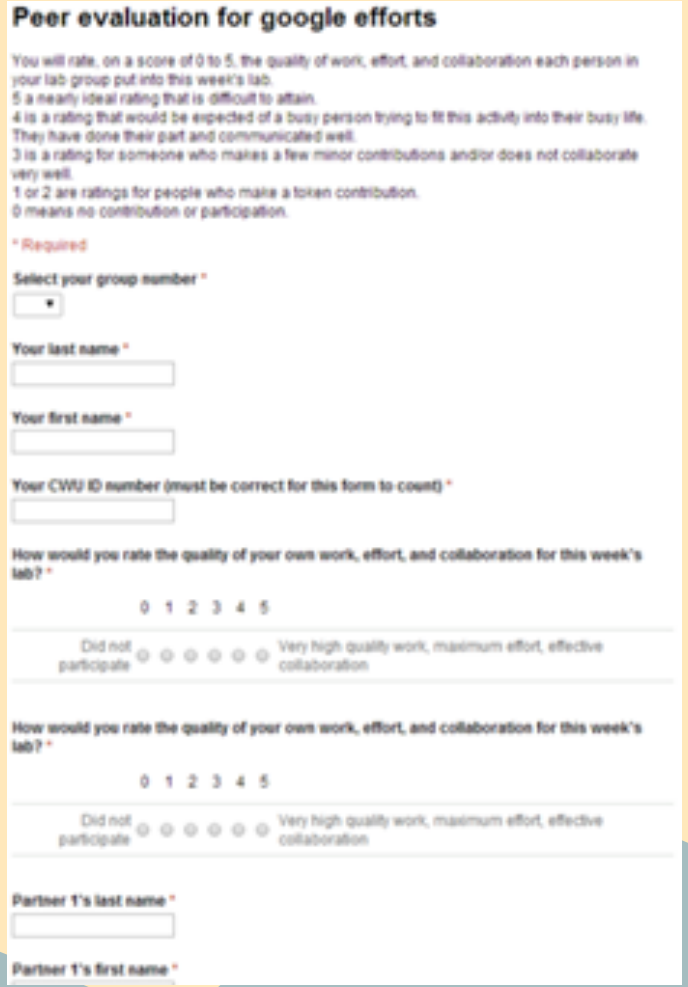
You would need to travel to the Tropic of Cancer at 23.5°N. About 2000 miles south.

Question 7: Set up the simulator for Nordkapp, Norway which has a latitude of 71° N. Complete the following chart for the meridional altitude and the rising and setting azimuths for the 3 major paths of the sun.

Date	Meridional Altitude	Rising Azimuth	Setting Azimuth
Summer Solstice	42.4°	0°""Better to say it doesn't set on this day.	0°
Autumnal Equinox	19.4°	89.8°	269.7°

Peer assessment

- Each lab template has a link to a peer assessment form using Google Forms.
- Students fill out the form and submit it
- The data goes to a spreadsheet



Peer evaluation for google efforts

You will rate, on a score of 0 to 5, the quality of work, effort, and collaboration each person in your lab group put into this week's lab.
5 a nearly ideal rating that is difficult to attain.
4 is a rating that would be expected of a busy person trying to fit this activity into their busy life. They have done their part and communicated well.
3 is a rating for someone who makes a few minor contributions and/or does not collaborate very well.
1 or 2 are ratings for people who make a token contribution.
0 means no contribution or participation.

* Required

Select your group number *

Your last name *

Your first name *

Your CWU ID number (must be correct for this form to count) *

How would you rate the quality of your own work, effort, and collaboration for this week's lab? *

0 1 2 3 4 5

Did not participate — Very high quality work, maximum effort, effective collaboration

How would you rate the quality of your own work, effort, and collaboration for this week's lab? *

0 1 2 3 4 5

Did not participate — Very high quality work, maximum effort, effective collaboration

Partner 1's last name *

Partner 1's first name *

How is the grade determined?

- If the average peer grade for a student is from 4 to 5, student gets all awarded points.
- If the average peer grade is less than 4, her grade for the lab is reduced based on the peer grade fraction.

Instructor's lab grade	Ave. peer grade	Calculation	Points awarded
10	5	peer > 4	10
10	4	10 * (4/4)	10
10	3	10 * (3/4)	7.5
10	2.5	10 * (2.5/4)	6.25

Does this method work well?

Advantages

- Collaboration done synchronously or asynchronously
- Instructor controls the templates
- Peer evaluation --> accountability

Disadvantages

- Making templates is time consuming
- So is compiling peer grades
- Instructor don’t know the reason for a peer grade

Questions?

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