Experiences with Lab Notebooks in Blackboard 9.1: The Good, the Bad, and the Ugly

David Klassen
Rowan University

BlackBoard 9.1

- ❖ Why?

  - ❖ Because it's what we have on campus

  - ❖ (So I'm *really* curious what others are using!)

- ❖ Has "group" capability and "group tools"

  - ❖ Use Wiki for lab notebook

  - ❖ BlackBoard also has Journals and Blogs...

    - ❖ But they lack tracking features of Wikis

The Good

Creates my lab groups

Groups named after the lab;
One Blackboard group per lab group

7 Thursday August 2014

Each group wiki is graded

I use random enroll
3 students/group

I *have* been known to tweak groups manually...

Can move students in/out of groups quickly. I make them the night before and have had to shuffle in class due to absences; really easy! Also tweaked if I know there are other "conflict issues" between students.

Rubric

Name Lab Journal Entry 2d

Description

Rubric Detail

Levels of Achievement

Criteria	Every element; superior quality	Every element minimally met	Some elements missing	More than half of elements missing	Not completed
Objective/Intro	4 Points	3 Points — Entry is properly headed containing date and names of experimenters; objective is succinctly stated in your own words; may include some brief background notes—in your own words	2 Points	1 Points	0 Points
Procedural Steps	4 Points	3 Points — Tasks performed are well documented—complete, clear, yet succinct; any non-standard equipment used is briefly described; tools used to make measurements noted when they are used with expected uncertainties—not as an initial "ingredients list"	2 Points	1 Points	0 Points
Observations/Data	4 Points	3 Points — All observations, included pre-data-collection work, are noted along with any inferences made from those observations; measurements recorded as they are taken; all measurements have associated absolute uncertainty recorded (can be single statement for all similar measurements); summary table of data after all data collected as needed (may be in attached spreadsheet)	2 Points	1 Points	0 Points
Results/Analysis	4 Points	3 Points — Fundamental equations used noted; final form equations used noted; equations are formatted properly (no "fake math" notations); detailed computations are not cluttering up the entry; all (properly formatted) graphs are included as needed (may be in attached spreadsheet); final numbers with associated relative precision error and relative accuracy error are clearly noted; notes on how final number(s) and uncertainties were derived are included	2 Points	1 Points	0 Points
Conclusions	4 Points — More advanced: Discussion will logically describe how the error sources affect the final numbers	3 Points — Descriptive analysis comparing relative precision error and relative accuracy error; possible major sources of systematic error noted as needed (may not invoke "human error"); discussion of whether objective was met (if not, why not); end-of-lab questions are addressed in a prose analysis (not a Q&A)	2 Points	1 Points	0 Points
Overall	4 Points — More advanced: Could someone else, who took this course last year, write up a formal report on your experiment from just your notes?	3 Points — Did everyone sign off? Could you realistically write up a formal report from your notes?	2 Points	1 Points	0 Points

View Associated Items

Assigns a rubric (that you create) to the Wiki

If everything is just "OK" 18/24 (C+/B–)

Of course, I can always normalize course grades at the end of the semester if I feel my overall scoring has been too harsh

https://bblearn2.rowan.edu/webapps/Bb-wiki-BBLEARN/wikiView?course_id=_10130_1&wiki_id=_7036_1   Google

To get a new number of waves we adjusted the weight hanging on the end. We found another standing wave pattern with 2 waves on the string with a mass of 66 g total or 61 g added to the hanger. The wavelength was 0.67m. We got one and a half standing waves with 125 g of mass hanging on the end. The wavelength was calculated to be .8933m. Another standing wave was found with 325 g hanging. With one full wave pattern on the string the wavelength was the same length as the string 1.34m. We had to increase the amplitude in order to see the wave for this one.

When we decided to use less mass to find more standing wave patterns we accidently got another 2 wave long pattern with 67 g hanging and it was much more stable than what we got with 66g hanging. We got a 5 half wave long standing wave pattern with 43 g hanging. The wavelength was .536m. With a bit of help from another group we found a 7 half wavelength standing wave pattern with 21 g hanging on the end. We found the wavelength to be about .3829m. We found the 6 half wavelength pattern with 29 g hanging. We calculated the wavelength to be 0.4467m. We a found a finicky 9 half wavelength standing wave with 12 g hanging on the end. The wavelength was found to be 0.2978m.

Our data was put into the attached Excell Spreadsheet.

Error Analysis

In order to calculate our error we used the formulas given.

We first tested out error using out normal RPE and RAE formulas.

$$RPE = \frac{\sigma_m}{m} \times 100\%$$

$$RAE = \frac{\sigma_b}{b} \times 100\%$$

When we plugged our numbers in from our linest chart into this equation we calucuted:

RPE = 1.912% and RAE= 21.06%

Next, We calculated our RPE and RAE using the new equations we were given for this experiment.

$$RPE = n_{\sigma_m} = \frac{|m - m_{theoretical}|}{\sigma_m}$$, where mtheoretical was calculated by solving for c in the equation

$$\lambda = c\sqrt{M}$$ and $$c = \frac{1}{f}\sqrt{\frac{g}{\mu}}$$

we found c=2.677

$$RAE = n_{\sigma_b} = \frac{|b - b_{theoretical}|}{\sigma_b}$$, where btheoretical = 0

Once again we used the information from our linest chart to calculate our RPE and RAE we found them to be,

RPE = 8.664 and RAE = 4.745

Since our RAE < RPE that means YAY! we did good!

Conclusion

Overall, we think we were successful in the completion of this lab. We were able to find several standing waves on a string with two through nine half wavelengths. Being able to find a variety of different standing waves gave us alot of different data to enter into our chart. This gave us a better best fit line because there were more points for it to be based off of. In the end our RAE < RPE which means we did good. It meanswe did well with both our precision and accuracy

Modern editor that allows word formatting, super- and subscripting, equations, inline special characters, image import, file attachment

Not that all students make use of it fully...

I look at each entry as they are working to point out how to get equations and characters

...so this means one can't really use these values as a measure of actual contribution. Plus, those who are not doing the recording are the ones getting the data. There has been some discontent voiced by "recorders" who feel disconnected from the experiment so in future I'll be encouraging trading off the duties, but without changing whose logged in.

Participant's Contribution:

All pages and versions that you have modified are listed. To see your specific changes, choose to compare versions under **User's Modifications**, if available. Click a link in the **Page Version** column to view the version without annotated changes. More Help

Click here!

Page Version	User's Modifications	Created On	Words Modified
(8)	Compare to Version 7	3/27/14 12:43 AM	54
(7)	Compare to Version 6	3/27/14 12:37 AM	17
(6)	Compare to Version 5	3/27/14 12:34 AM	127
(5)	Compare to Version 4	3/27/14 12:26 AM	241
(4)	Compare to Version 3	3/26/14 11:41 PM	14
(3)	Compare to Version 2	3/24/14 1:27 PM	40
(2)	Compare to Version 1	3/24/14 12:53 PM	121
(1)		3/24/14 12:37 PM	73

Displaying 1 to 8 of 8 items   Show All   Edit Paging...

Can see all their saves; when, how much changed

cf to previously saved version

Can see how much was done in and after class!

Wiki Details ⌄

3/24/14 9:45 AM Grade   16 /24

16 /24

16 /24

GRADE BY RUBRIC

LAB JOURNAL ENTRY 2D   Used for Grading

FEEDBACK - SHOWN TO LEARNER

Character count: 0

Add Notes

Submit

PARTICIPATION SUMMARY

Modified By:

Words Modified: 687 (58%)

Total Page Saves: 8 (72%)

← OK

201420-PHYS00221 – INTRO THRMDYNM/FLU /WVS/OPTICS (Section 1)

Home Page
Information
Discussions
Handouts
Groups
Lab
Wikis
Sites and Docs
Assessments
e-mail

Rowan Library
Help
Calendar

COURSE MANAGEMENT

Control Panel

I tell them, since it's a notebook, 90% of it should be done before they leave class; need to be more intentional about checking that before letting students go

Grading with rubric is a snap!

In their grade book view students can click score and follow links to see all comments

Rubric also prevents me from my bad habit of using .5 marks; must score in integers or make a wider ranged rubric.

The Bad

With 10 labs/semester, 7 groups per lab, grade book will have 70, very sparsely populated, grade columns, but...

And once you have the totals, can hide the 70 other columns.
But really, you can't…
And if you use these for automatic grade creation, the max score is 7*24! Still trying to figure that one out; they really need a "max" or "boolean or" or a total that doesn't total the max…

The Ugly

- Pulls one student out of experiment to be recorder
  - Encourage rotating that during lab?
- While students can click scores for comments
  - The don't… Keep seeing same issues
  - Or they don't know they can that?
- Are in "report" mode, not "notebook" mode
  - Because they are typing it up?
- Tendency to skip taking procedural notes and focus only on getting all the data
  - "Will fill that in later"

- Only have one notebook per group
  - Less to grade!
- Student stress: grade depends on recorder doing good job so not graded on just "their work"
  - Have approval "check points" by me/group?
  - Individual objective/results submissions?
- Slower for students
  - Want to "take notes" on paper, then "write it up nicely on the Wiki"—i.e. not getting the concept
  - Text entry, with formatting, slower than pen/paper

- Technology not always reliable
  - Had campus-wide network outage
  - Had BlackBoard server go down
- Need to remind students of "Gamer's Mantra": Save early, save often!
- Some student's don't like the interface
  - Let them use word processor for notes
  - But must cut/paste into Wiki before leaving!
- If data/calculations done in spreadsheet, I have to download and reference; can't comment and they usually don't header/annotate well

Overall Assessment

- The Good outweighs The Bad

- The Ugly can mostly be mitigated with a bit of work and monitoring

- Keep using, keep trying to improve

  - Will provide feedback to BlackBoard