DEPAUL UNIVERSITY
OFFICE FOR TEACHING, LEARNING AND ASSESSMENT

SoTL Grant Closure Report (2015-16)

I. Basic Information

Title of Project: **Exploring student use of whiteboards using classroom video**

Investigator(s) Information

Principal Investigator:
Name: Mary Bridget Kustusch
College: College of Science and Health
Department: Physics
Phone Number: 773-325-0389
Email Address: mkustus1@depaul.edu

Other Investigators (Co-Pi):

Name	College	Department
Susan Fischer	College of Science and Health	Physics

II. Project Update

Research Question

When and how do groups use whiteboards to engage in various types of activities and how does this use correspond to different types of interaction and discourse?

Research Plan

Create a catalog of video data and identify episodes for further analysis.

Progress Report

Given the scope and time limitations when training and working with student research assistants, this project is still in progress, though we now have initial catalog items for all 2015 data (23 days, 3 sections). These initial catalog items were created using the handwritten field notes from the observers in the classroom. We are now going through these initial catalog items to sync them to the Table/Group video data using video timestamps and to identify the relevant activities that occur during each time. In the appendices, we show definitions for each type of metadata or activity code (Appendix A), an initial catalog item based on field notes

(Appendix B) and a completed catalog item that has been synced to video data and coded (Appendix C). In addition to the primary class activities, we separately identify any times when the students use the whiteboards regardless of whether the assignment explicitly requested it. These episodes when students are using whiteboards will then be extracted and analyzed to address our research question.

Given the status of this project, we opted not to collect additional data in Spring 2016. In addition, our current data overlaps with a major pedagogical change in the department and we felt it would be better to wait to collect more data to allow time to adjustments to be made and for the course to achieve a more steady-state. After completing an initial analysis of our current data, we will reevaluate the need for additional data.

Impact and Dissemination of Results

We are maintaining an on-going discussion with the faculty teaching in the PHY15x sequence and will continue to do so as we identify patterns and trends in whiteboard use. We plan to work with these instructors to revise current activities, and when appropriate, to develop new activities in the light of our results. Since the use of whiteboards extends beyond physics, we expect to present results at the 2017 DePaul Teaching & Learning conference and explore appropriate peer-reviewed venues that will reach a broader audience (such as The Physics Teacher or the Journal of College Science Teaching). In addition, our plan is for this catalog to provide a useful means of identifying appropriate data for several undergraduate and graduate research projects and publications over the next few years.

III. Expense Report

All SoTL grant funds were spent training and paying student research assistants to create initial catalog items and to revise those items by watching the video and identifying relevant classroom activities and instances of whiteboard use. Much of the delay in analysis was in the transition from Student Research Assistant (SRA) #1, who was already IRB trained and familiar with the data but graduated in Winter 2016. Both SRAs #2 and #3 went through training in Spring quarter but were unavailable to work over the summer. SRA #2 has not been able to continue this quarter due to time conflicts, but SRA #3 is continuing this quarter where SRA #1 left off.

Student Researcher	# of Hours	Pay Rate	Expenses
Student Research Assistant #1	101	$12.50/hour	$1262.50
Student Research Assistant #2	5	$12.50/hour	$62.50
Student Research Assistant #3	3	$12.50/hour	$37.50
Totals	110		$1362.50

Appendix A.

Code definitions for metadata and classroom activities

Metadata codes:
{date}: Date of class session in video
{day}: Day of the class session during the quarter. Example: Day 6 is the 6th day of class for the quarter. Since the class meets MTWH, this would be typically be on Tuesday of Week 2.
{instructor}: Each instructor was assigned a letter (A,B,C,D)
{update}: Date of most recent update to catalog file followed by the initials of the last person to update the file.
{table}: Table number where camera is focused
{time}: time stamps that are synced to video
{bob}: Field notes reference content that is off camera (such as what other tables are doing), so need to be verified from video from second camera (nicknamed "bob").

Activity codes:
{activity>clicker}: Instructor asks or discusses a clicker question
{activity>demo}: instructor does demonstration
{activity>embodied}: Students are doing an activity that involves moving their body
{activity>lab}: Group is working on a laboratory experiment (usually involving equipment).
{activity>lecture}: Instructor addresses the entire class aside from explicit clicker questions or demonstrations.
{activity>personal}: Students discuss non-class related topics
{activity>quiz}: Class takes a quiz
{activity>worksheet}: Group is working on a worksheet
{activity>whiteboard}: Task assignment explicitly involves using the whiteboard (as opposed to a worksheet or clicker for example). If the instructor is writing on the classroom whiteboard and addressing the whole class, it should be lecture. If the instructor is writing on a group's whiteboard and/or only addressing the group/table, use WB, since this is one way that the whiteboard is being used within the group.

{WB}: Group is actually writing on the whiteboard and/or explicitly discussing what is written on the whiteboard even if the task did not explicitly indicate that they should use the whiteboard. For example, if the group is working on a worksheet task, but using the whiteboard to discuss the task, this should be coded as activity>worksheet AND WB. If TA or instructor is on side whiteboard talking specifically to one group, this should also be coded as WB.

Appendix B.

Initial catalog item from field notes

{!name "20150407Cnora.txt"}
{!videowindow}

{date} 04/07/2015 {/date}
{day} 6 {/day}
{instructor} C {/instructor}
{update} 2015/12/28 - rd {/update}

Original Field Notes: Jaime Bryant
Other Videos: 20150407Bbob.mp4
Total Length: 01HR_24MIN

{table} 2 {/table}
07:12:36 Start class discussion, electric field
07:16:09 Professor reviewing material that the class covered yesterday
07:16:42 Professor hands out packet
07:17:12 Professor has class answer iClicker question
07:19:11 2 students at Table 1 begin discussing which direction the vector will point
07:21:40 Personal conversation
07:21:58 Professor shows clicker results
07:23:17 Students move onto next problem in packet number 2 (professor instructs students to move on)

{table} 5 {/table}
07:25:54 (moved camera to table 5) TA helping student work thought problem number 2
07:26:34 Professor has started going over problem
07:27:26 TA helping other students at Table 5
07:29:05 Student at Table 5 asks professor a question about sign
07:33:15 Students discuss problem with TA
07:36:20 TA helps student identify what quantities are known and unknown and what trig terms to use
07:38:34 Students begin working on part F of number 1 in packet
07:41:18 Professor points out the units when calculating force in part f
07:42:43 Student answers professors question but quantity professor was referring to is a scalar
07:44:31 Class transitions into working on Bob and Nora problem
07:45:23 Group 1 is having off task conversation
07:46:02 Students facial expressions at Table 5 look confused, make a little frustrated
07:46:49 Table 1 working through problem
07:48:04 By the time 1 get camera on Table 1, students are engaged in personal conversation
07:49:43 Professor comes over and asks who is right and why is bob wrong?
07:51:38 Professor going over problem with Table 5
07:53:25 Professor introduces Phet Simulation and worksheet
07:55:20 Student, after doing some of simulation, says - arrows move just like we did in the class activity
07:59:17 Personal conversation
08:00:45 Students have just been reading through directions
08:01:31 2 groups pair up to make sure they are doing the correct simulation as the directions say
08:02:42 Student says - I do not know how to draw a field with no charge - (wording of this is not exact)
08:04:42 Student asks professor question about charges really close together
08:08:45 Student at Table 4 explains what they did for a portion of the worksheet
08:10:09 Students at Table 4 continue to explain how to work through problem on worksheet
08:11:06 Students at Table 4 move onto part 4E
08:15:06 TA helps students at Table 1 with Phet Simulation
08:16:48 Other students at Table 1 having personal conversation. TA still working with one group at Table 1
08:17:59 Professor talks with group at Table 1
08:20:52 Professor still talking with group about adding test charges to simulation
08:23:14 Students at Table 1 talking about distance between charges
08:24:07 Personal conversation
08:25:19 Personal conversation
08:26:10 Class is wrapping up
08:26:56 8 students still working on packet (2:22pm)
08:28:21 Students at Table 1 discussing electric field
08:29:41 Students at Table 1 discussing problem with professor
08:31:04 Student at Table 1 formulating answer for last question
08:31:38 4 students still working on packet (2:26pm)

Appendix C.

Completed catalog item with coding for activities.

{!mediafile 20150330Anora.MP4}
{!name "20150330Anora.txt"}
{!videowindow}

{date} 03/30/2015 {/date}
{day} 1 {/day}
{instructor} A {/instructor}
{update} 2016/05/21- dls {/update}

Field Notes: Rita Dawod
Other Videos: 20150330Abob.MP4
Total Length: 01HR_00MIN

{table} 2 {/table}

{activity>lecture}
{time}00:00:00{/time}
Instructor introduces activity (2-3 examples where you get static electricity)
Comments about camera operator.{/activity>lecture}
{time}00:00:42{/time}
White boards are handed out
{WB}{activity>whiteboard}
{time}00:01:40{/time} Activity Begins (2-3 examples where you get static electricity)
    Group 1 is working together
    Middle member is writing
    All members are contributing
    Table 2 is quiet
        -Finished work and discussion stopped
    Group 1 quiet once work is done
{/activity>whiteboard}{/WB}
{activity>lecture}
{time}00:05:00{/time} Professor stops students and checks answers > starts discussion{/activity>lecture}
{time}00:08:00{/time} Professor tells TAs to pass out laptops
    Group 1 talks about non-class related topics
{activity>worksheet}
{time}00:11:00{/time} Group 1 starts working on activity 2
{time}00:12:15{/time} Group 2 starts working on activity 2
{time}00:12:40{/time} Group 1 discusses courses while waiting for Phet to open
    Tables 1, 2 and 3 have little/no discussion
{time}00:13:45{/time} Group 1 discusses activity
        - Sharing what they know/ideas
    Group 2: 2 members contribute, 3rd member copies work
{time}00:15:25{/time} 3rd group member of Group 2 contributes
{time}00:16:00{/time} Group 2: 1 member explains, one agrees, one shows it on Phet simulation
{time}00:17:00{/time} Same member explains again; members agree
    [Table 2 still quiet]{/activity>worksheet}

{activity>lecture}
{time}00:18:00{/time} Professor starts discussion on "Part 2"
{time}00:19:10{/time} Student asks question about the concept
{time}00:22:00{/time} Student at Table 6 answers most of professor's class discussion questions.
{time}00:23:37{/time} Student at Table 3 asks a question about worksheet question
00:24:00 Student from Group 1 asks a follow-up question{/activity>lecture}
{activity>clicker}
{time}00:25:10{/time} Professor starts iClicker Registration
    Group 1: 2 members do not have their iClickers
{time}00:31:49{/time} Professor starts first iClicker problem.
    Group 1 starts discussion immediately
    Group 2 does not discuss
{time}00:32:00{/time} Professor discusses answer with the class{/activity>clicker}
{time}00:33:40{/time} Professor tells students to get back to Activity Part 3
    Group 1 discusses course schedule
    Group 2 does not discuss
{time}00:34:38{/time} Tables 4 and 6 talk about non-class related topics.
{activity>worksheet}
{time}00:34:56{/time} Group 2 member takes laptop and works with Phet simulator on his own
{time}00:35:00{/time} Group 1 still has not started Activity
    Groups 1 and 2 discusses courses together
{time}00:36:00{/time} Professor sits at Table 2 to help encourage discussion
{time}00:37:00{/time} Table 6 discusses Activity; asking each other questions
{time}00:37:20{/time} Group 1 begins Activity
{time}00:38:15{/time} Member of Group 1 uses everyday example to explain concept{/activity>worksheet}
{activity>lecture}
{time}00:38:50{/time} Professor stops students to discuss Activity
{time}00:39:00{/time} Student introduces a "new unit"
{time}00:41:15{/time} Member of Group 1 contributes to class discussion
{time}00:42:10{/time} Another member of Group 1 asks a question{/activity>lecture}
{activity>quiz}
{time}00:45:45{/time} Professor and TAs hand out concept test
    Students put their things away
{time}00:47:00{/time} Students begin concept test
{time}00:55:15{/time} Member from Group 1 uses a drawing to better understand a question from the concept test.
{/activity>quiz}