LEE

LEARNING ENVIRONMENT EVALUATION

Data Report: Student Use of Technology in AH177
Spring 2015 – Spring 2016
May 2016

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At A Glance

- Students preferred to use their own devices to the laptops provided in the room.

- Those that used the laptops in the room found them useful, and easy to return to the cart, but time-consuming to do so.

- Connecting to the screens was considered useful and easy to do.

- Students thought that having multiple HDMI cables at a table was useful.

Preface

This report is aimed at an audience who is familiar with the technology aspects in AH177, the LEE Project Classroom (SCALE-UP room) at its status in each of the terms encompassed here: Spring 2015, Fall 2015, and Spring 2016.

Technology Survey

Survey Questions

As part of the Learning Environment Evaluation (LEE) survey conducted in AH177, the LEE project team was particularly interested in the use of the unique technologies in the room. These technologies included a) a laptop cart with 15 Dell Latitude laptops, b) four retractable HDMI input cables in a recessed cable housing at each table, c) the ability to view content from the provided laptops or personal devices on a 60" LCD screen at each table, and d) the ability to switch inputs to the screen with ease and speed via a button press on the cable. In addition to the questions about the physical environment, students were specifically asked about the technology features in the room. The technology survey questions were as follows:

5. Please rate your ability to use the following:			
5.1	PC laptops from laptop cart	With Great Difficulty ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Very Easily	☐ Did not use
5.2	Displaying content from PC laptop from laptop cart on LCD screen at table	With Great Difficulty ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Very Easily	☐ Did not use
5.3	Displaying content from my own device on LCD screen at table	With Great Difficulty ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Very Easily	☐ Did not use
5.4	Switching content between multiple devices on LCD screen at table	With Great Difficulty ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Very Easily	☐ Did not use
5.5	Did you use your own device to connect to the screen?	☐ No ☐ Yes	

Students rated items 5.1 through 5.4 on a scale of 1 = "With Great Difficulty" to 8 = "Very Easily." Item 5.5 was a dichotomous Yes/No question. A total of 488 ($n_{Spring15}$ = 171, n_{Fall15} = 169, $n_{Spring16}$ = 148) students participated in this question set over three terms, but not everyone answered all items. The largest rate of non-respondents was in the Spring 2015 term, ranging from 12.3% to 28.7%.

Survey Results

In the following, results to all question items are presented in the order they were asked in the survey. Please refer to the survey excerpt above.

Using Dell Laptop
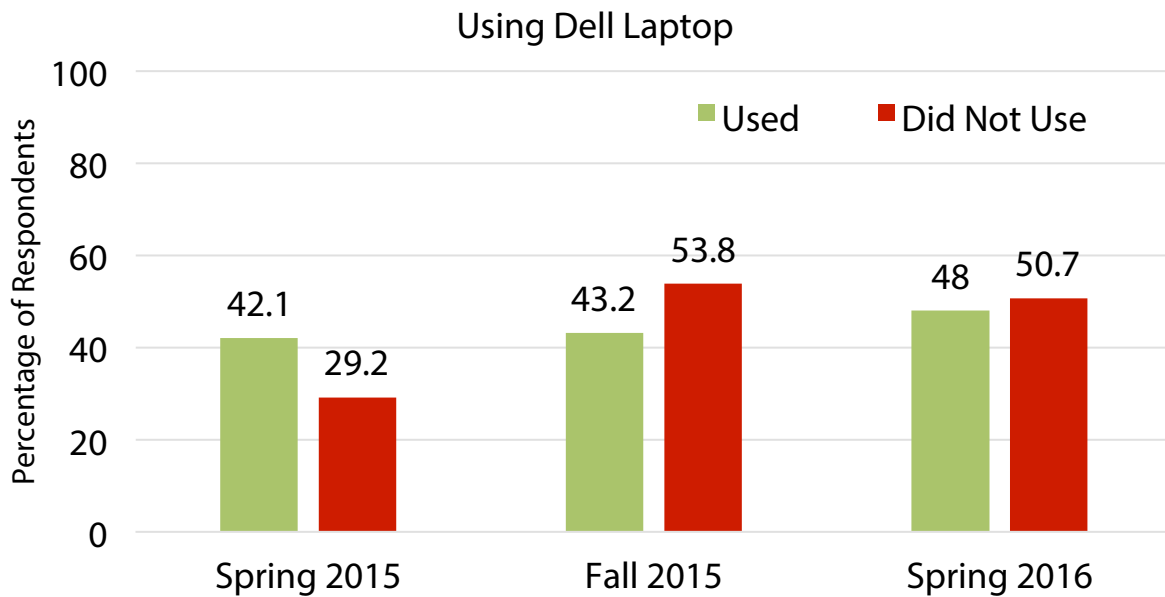
Figure 1. Use of PC laptops from laptop cart. Responses were divided based on use (collapsed across level of ease/difficulty) and non-use for each of the three terms. Percentages of respondents who used (green) and did not use (red) the PC laptops from laptop cart are presented.

Displaying Dell Laptop
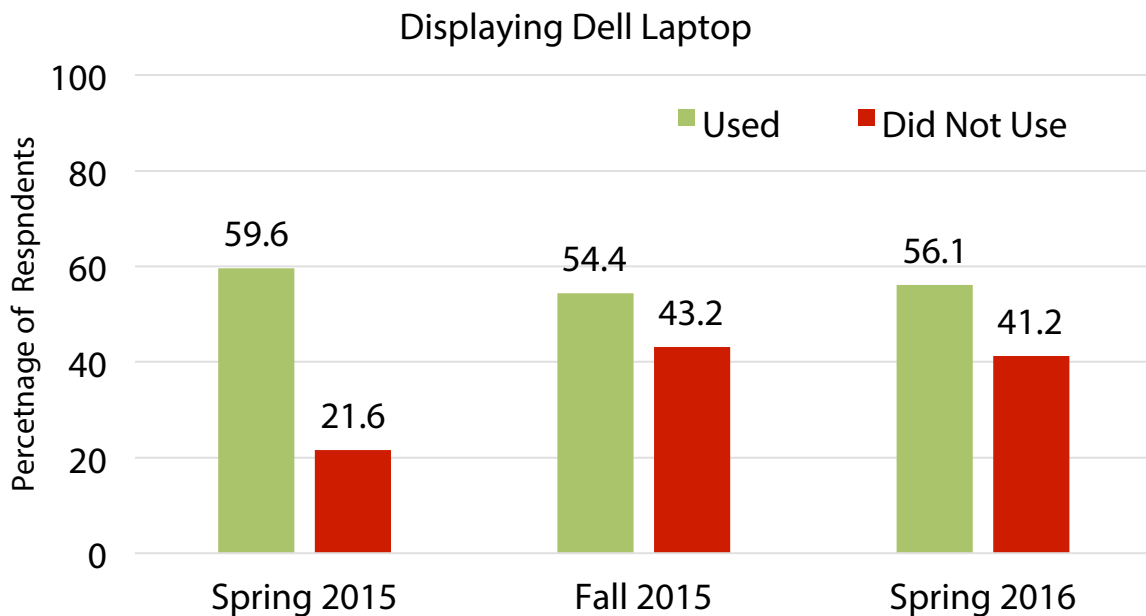
Figure 2. Display of PC laptops on screen. Responses were divided based on use (collapsed across level of ease/difficulty) and non-use for each of the three terms. Percentages of respondents who displayed (green) and did not display (red) content from the laptops from the laptop cart on the screen are presented.

Displaying Own Device

Figure 3. Display of own device on screen. Responses were divided based on use (collapsed across level of ease/difficulty) and non-use for each of the three terms. Percentages of respondents who displayed (green) and did not display (red) content from their own device on the screen are presented.

Switching Input

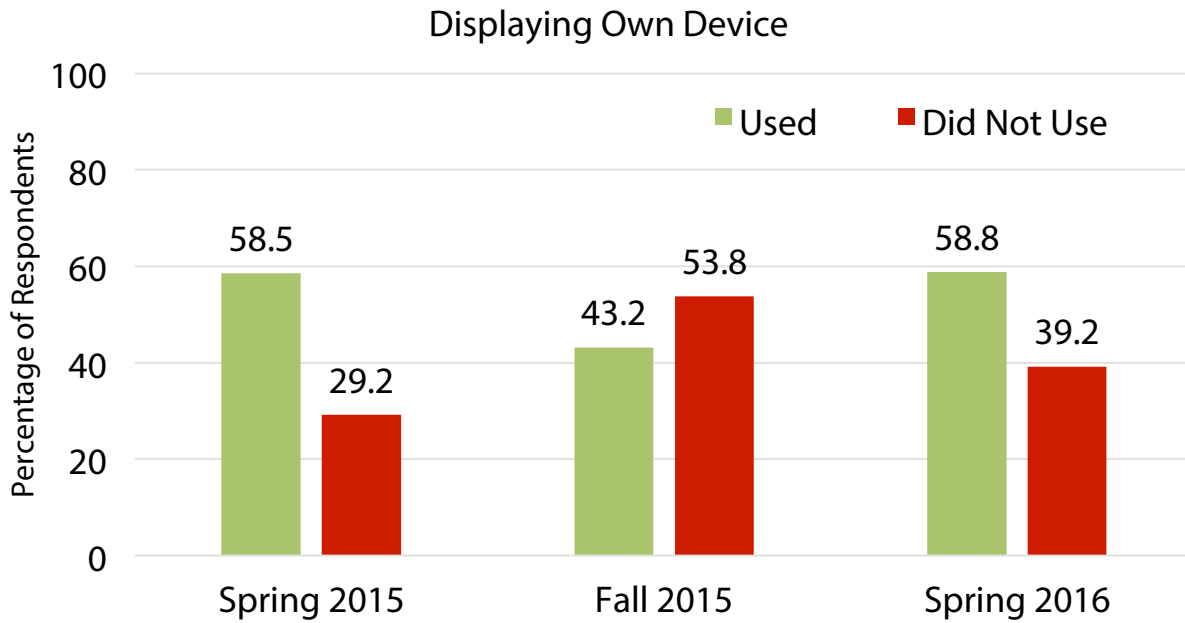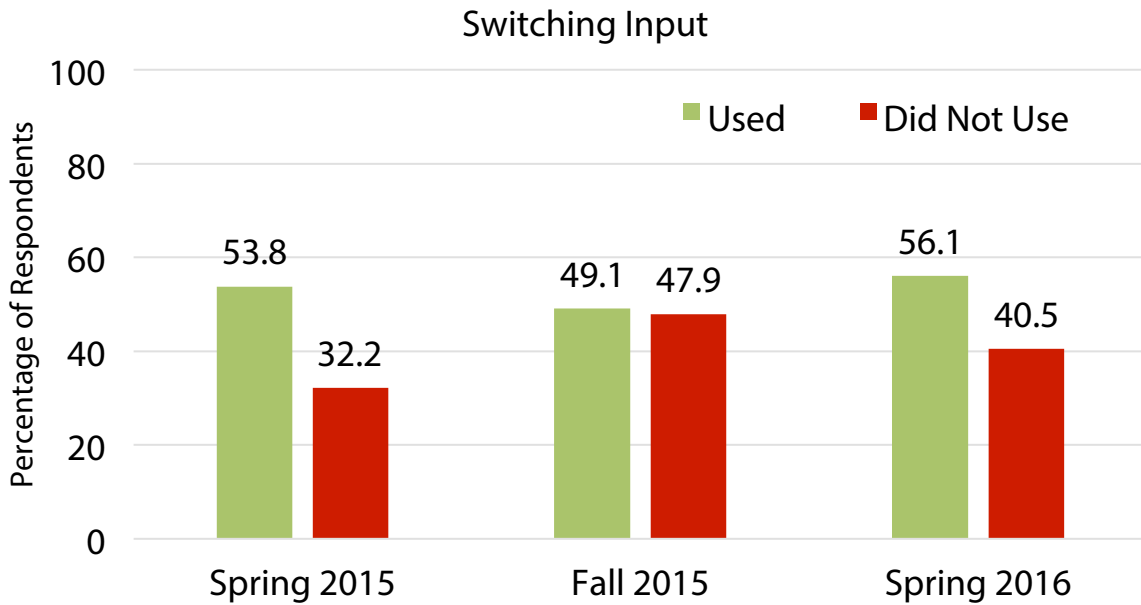*Figure 4.* Switching content between multiple devices on screen. Responses were divided based on use (collapsed across level of ease/difficulty) and non-use for each of the three terms. Percentages of respondents who switched (green) and did not switch (red) content on the screen between multiple devices are presented.

Connecting Own Device
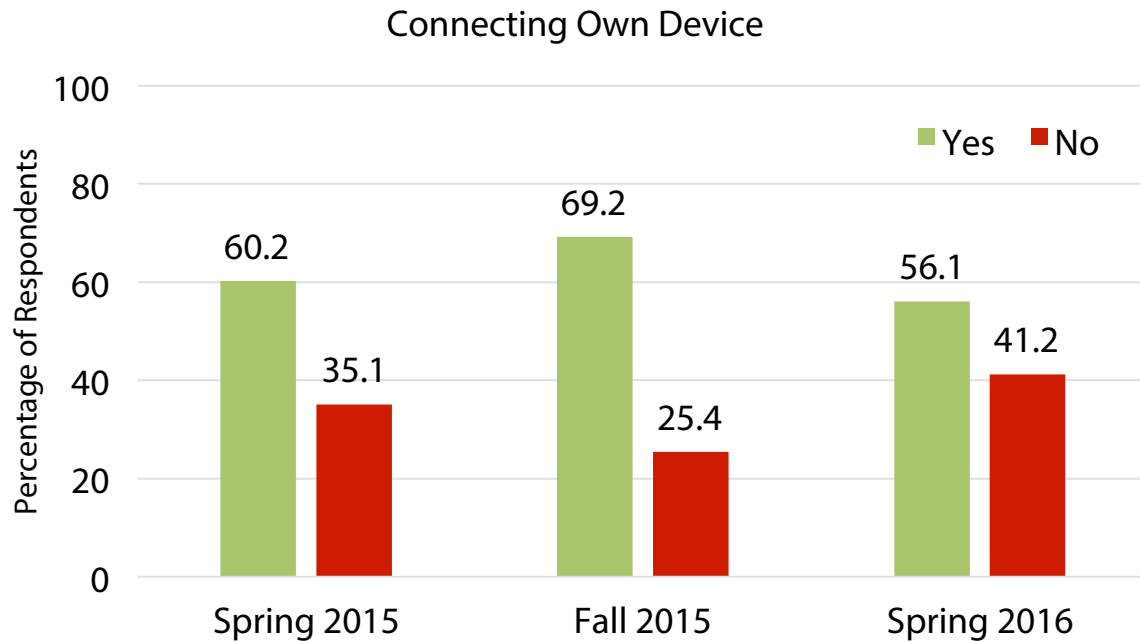
Figure 5. Connecting own device to screen. Participants were asked whether or not they had used their own device to connect to the screen. Percentages of respondents who did (green) and did not (red) use their own device to connect to the screen are presented.

Please Rate Your Ability to...
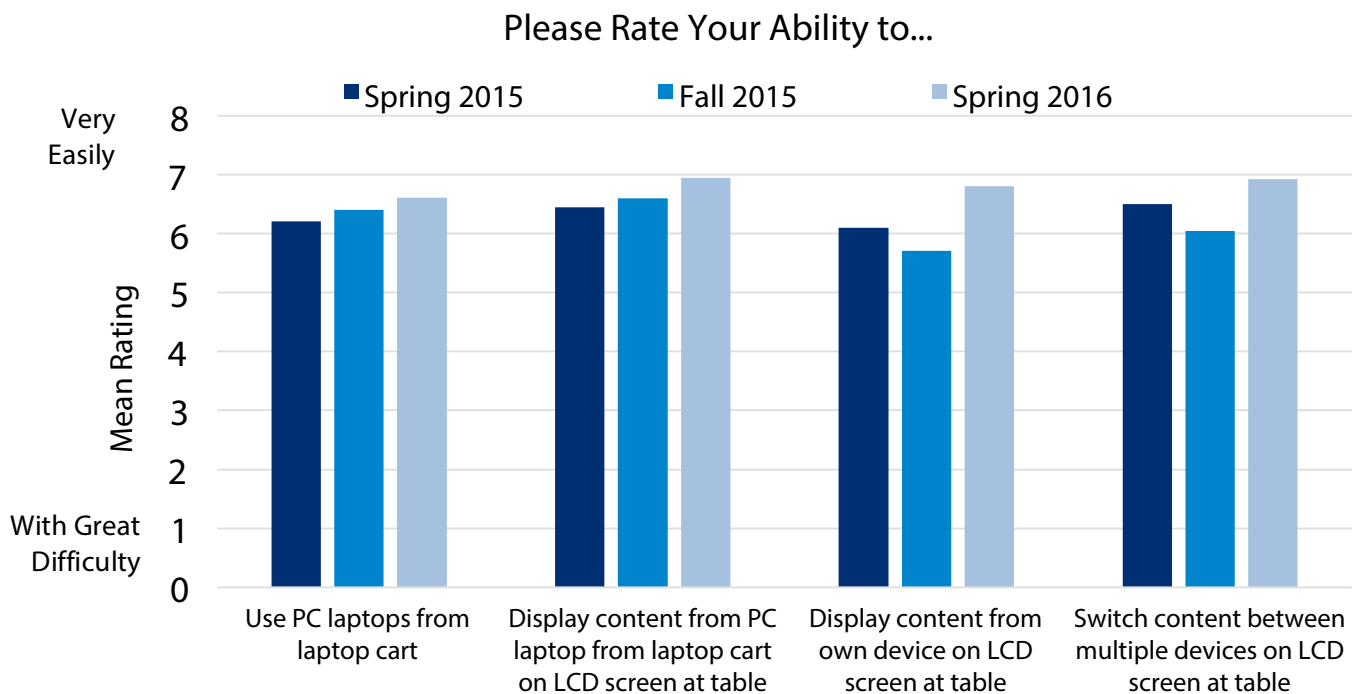
Figure 6. Mean ratings of ability to engage in the four activities listed across the three terms. Respondents here are those who answered affirmatively that they engaged in the activity asked about. Respondents rated each item on a scale of 1 = "With Great Difficulty" to 8 = "Very Easily." Mean ratings indicate that the ability to engage in each of the activities listed was easy (ratings of 5 to 8).

Open-Ended Follow-Up Questions

To better understand the large proportion of students who indicated that they did not engage in the activities listed above, the online, open-ended follow-up questions asked after the in-class survey incorporated the topic of technology in more depth in the Fall 2015 and Spring 2016 terms. Students were asked the following questions with skip logic based on their responses:

Q1

Did you use the laptops provided in the room?

Yes → Describe your experience using the laptops provided in the room.

Describe your experience removing and returning laptops from/to the laptop cart in the room.
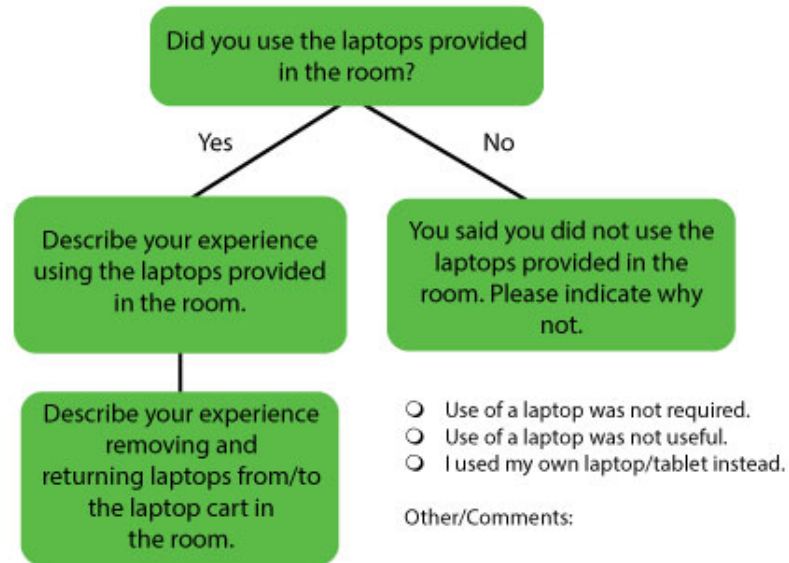
No → You said you did not use the laptops provided in the room. Please indicate why not.

○ Use of a laptop was not required.
○ Use of a laptop was not useful.
○ I used my own laptop/tablet instead.

Other/Comments:

Q2

Did you connect a device at your table to the screen?

Yes → Describe your experience connecting a device to the screen.

No → You said you did not connect a device at your table to the screen. Please indicate why not. (Check all that apply.)

❑ The device I used could not be connected via HDMI.
❑ I did not have an HDMI adapter for my device.
❑ Connecting to the screen was not useful.

Comments:

Q3

At each table, there are 4 HDMI cables to connect to the screen. Please comment on the usefulness of having multiple cables at each table.

Response rates for each question combined over the Fall 2015 and Spring 2016 terms are listed below based on the overall number of students enrolled in the courses studied in AH177. The total enrolment over two terms was n = 431 students. It must be noted that response rates to online questions are generally low and therefore not unusual. Overall, response rates ranged between 4.64% and 16.24%.

Table 1. Response rates for open-ended online questions based on total sample of n = 431.

	Number of Respondents	Response Rate
Did you use the laptops provided in the room?	70	16.24%
You said you did not use the laptops provided in the room. Please indicate why not.	46	10.67%
Describe your experience using the laptops provided in the room.	22	5.10%
Describe your experience removing and returning laptops from/to the laptop cart in the room.	22	5.10%
Did you connect a device at your table to the screen?	70	16.24%
You said you did not connect a device at your table to the screen. Please indicate why not. (Check all that apply.)	20	4.64%
Describe your experience connecting a device to the screen.	47	10.90%
At each table, there are 4 HDMI cables to connect to the screen. Please comment on the usefulness of having multiple cables at each table.	63	14.62%

Results are presented on the following pages. For each question, the results will be displayed starting with quantitative questions and followed by qualitative questions.
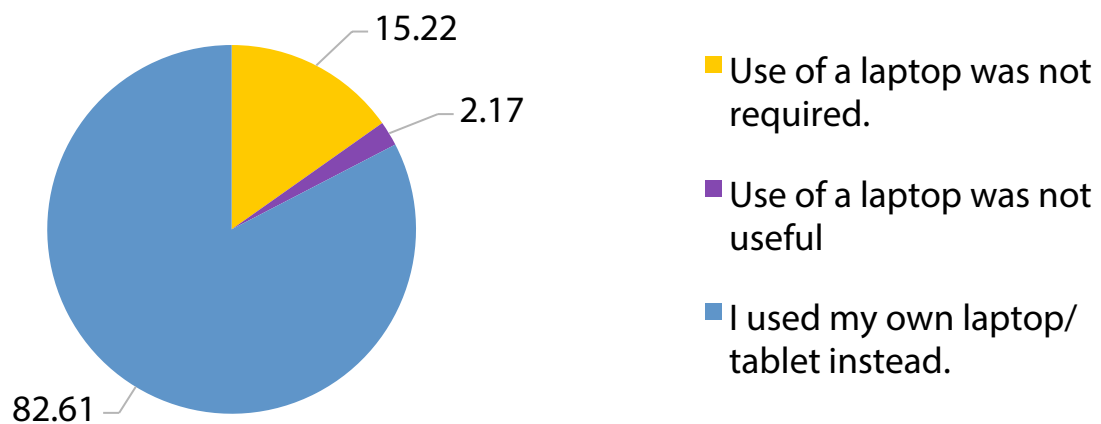
Use of Laptops and Laptop Cart

Did you use the laptops provided in the room?
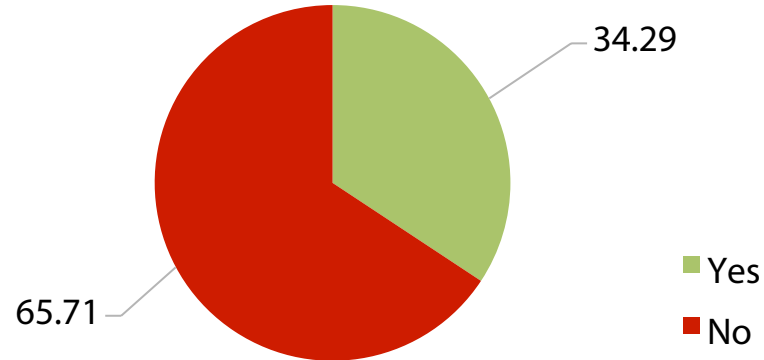
Figure 7. Student responses to the question of whether they used the laptops provided in the room. The answer options were Yes or No. A majority of 65.71% indicated that they did not use the laptops provided in the room.

Why did you not use the laptops provided?

Figure 8. Follow-up question for respondents who answered "no" to the previous question to inquire about reasons behind not using the laptops provided. Respondents had to choose one of the following answer options: "Use of a laptop was not required;" "Use of a laptop was not useful;" "I used my own laptop/tablet instead."

Respondents who answered that they used the laptops (34.29%) were subsequently asked to describe their experience using the laptops provided. Comments were grouped into negative or positive comments. The positive comments outweighed the negative comments 2:1. Among positive comments, several respondents highlighted that having laptop computers in the room allowed them not to have to bring a laptop to class, either because they do not

have access to one or do not want to bring one. Representative general positive comments were: "My experience was fine. The laptop did the job so I have no complaints;" and "They were easy to use, easy to log in and worked as any computer." Among negative comments, several respondents highlighted technical difficulties they experienced with the laptop. A representative comment explains: "We had many issues with the laptops in the class. Many did not work consistently, we had some that wouldn't allow us to log on, and some that wouldn't connect to the network." For the more general negative comments, students sometimes identified some upsides, such as them being "…beneficial though for people who don't have laptops." The negative comments often focused on specific issues, such as inability to log on, difficulty connecting them to chargers, not finding the software needed, and taking a long time to start up.
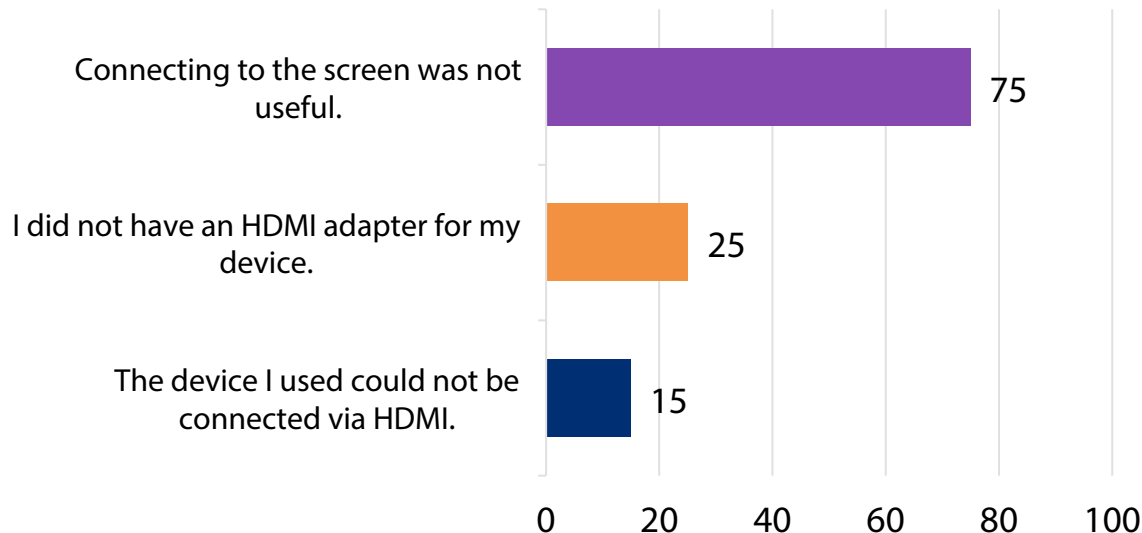
When asked about their experience removing and returning laptops from and to the laptop cart, the comments pertained to both ease and time of the process. Comments that it was easy outweighed those indicating it was difficult by over 3:1. However, comments indicating that it was a time consuming process outweighed those stating that it was fast by 4:1. Some comments specifically acknowledged that it was simple, but rather time consuming.

Connecting to the Screens

Did you connect a device to the screen?
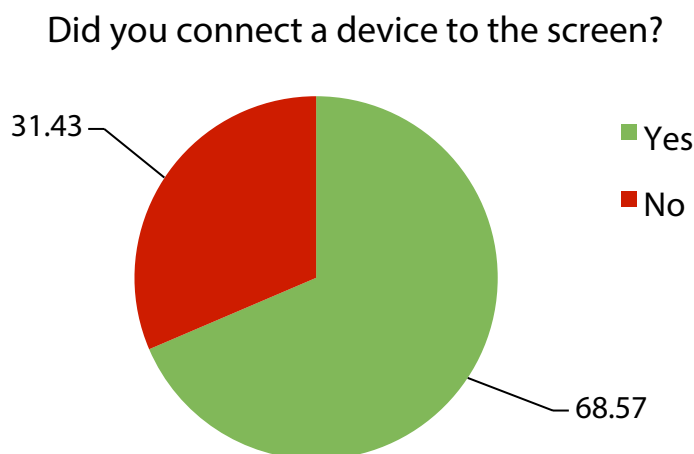
Figure 9. Student responses to the question of whether they connected a device to the screen. The answer options were Yes or No. A majority of 68.57% indicated that they connected a device to the screen.

Why did you not connect to the screen?

Connecting to the screen was not useful.	75
I did not have an HDMI adapter for my device.	25
The device I used could not be connected via HDMI.	15

Figure 10. Follow-up question for respondents who answered "no" to the previous question to inquire about reasons behind not connecting a device to the screen. Respondents could check all that apply from the following answer options: "Connecting to the screen was not useful;" "I did not have an HDMI adapter for my device;" "The device I used could not be connected via HDMI."

Respondents who answered that they connected a device to the screen (68.71%) were subsequently asked about their experience connecting a device to the screen. Positive comments outweighed mixed reviews and negative comments 10:3:1. A representative positive comment states that "It was really simple and easy to learn. The system works really well." Several positive comments highlighted that the screen allowed a group to view or share material. Mixed reviews explained that it was generally easy to use, but did not always work or sometimes lagged. A recurring problem cited was the inconsistency or inability to play sound. Lastly, a large amount of commenters lamented the lack of adapters for non-HDMI devices and their consecutive inability to connect to the screens.

All respondents were asked about the utility of four HDMI cables at each table. Half of all commenters indicated that they did or would find it useful to have multiple HDMI cables. A quarter of respondents thought multiple cables were unnecessary, and another quarter could not comment on the usefulness of multiple HDMI cables.