



PE Large Lecture Theatres – Fall 2013

Faculty Data Report

Learning Environment Evaluation Project
Victoria Holec
May 14, 2014

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1. Executive Summary

In the Fall 2013 term, the Learning Environment Evaluation Project (LEE) investigated Large Lecture Theatres at the University of Lethbridge campus. This investigation was part of a larger research study that LEE conducted to investigate the effectiveness of a variety of campus teaching and learning spaces, and the first of a two-part study of large lecture theatres. This part of the research project was intended to inform the planning process of the Destination Project New Academic Building.

The purpose of this report was to outline faculty perceptions of and experiences in the two largest lecture theatres on campus, PE250 (capacity: 299 students) and PE275 (capacity: 185 students). The faculty interviews (including a brief oral survey) were one of four aspects of this study and were conducted throughout the Fall 2013 term in conjunction with a) a student survey, b) classroom observations, and c) student open-ended online questions. Five faculty members participated in the study.

The interview questions pertained to the effectiveness of PE250 and PE275 as teaching and learning spaces and included the overall perceived effectiveness, physical aspects, and technological aspects of the rooms.

Overall, instructors liked PE250 as a teaching space. When it was disliked, it was mainly due to the fact that instructors were not fond of teaching a 300-student class. Most instructors reported that the technology in the room was easy to use. Instructors found it difficult to achieve student engagement, but conceded that this may have been a function of class size. On the other hand, they found that the room overall facilitated sightlines to and interaction with students, with the caveat of not being able to hear students well. When asked what could be improved in the room, instructors would like to improve the lighting control and quality in PE250.

Opinions about PE275 were divided. Instructors either loved or hated the room. Lighting control and room layout were two points of consensus when citing negative aspects of the room. Further, it was cumbersome and bordering on impossible to simultaneously use the whiteboard and the projection screen. Sightlines to the back rows were obscured. The location of the only entrance was a further point of complaint. Most instructors agreed that many of the negative features they experienced in both rooms might be primarily due to having to teach a large class.

Based on these data, recommendations for future lecture theatres are (a) a carefully constructed layout that facilitates sightlines and interactions, (b) high ceilings, and (c) lecture theatres of limited size due to instructors preferring to teach smaller classes.

2. Study Design

2.1 Design

In the Fall 2013 semester, five faculty interviews were conducted to identify faculty perceptions of two large lecture theatres, PE250 and PE275. These were part of a larger Learning Environment Evaluation (LEE) research study which investigated both student and faculty perceptions on the effectiveness of large lecture theatres on the University of Lethbridge campus. In this report, only faculty interviews are presented. Faculty interviews took place during the last month of classes in the Fall 2013 semester (i.e., December 2013).

2.2 Methods

Participants

In total, six faculty members were part of the initial study. These were equally divided between PE250 and PE275. However, one instructor was replaced by another instructor four weeks into the term. Both of these instructors were interviewed for PE250. Two instructors did not participate in the faculty interview. Final participant numbers were $n_{PE250} = 3$, and $n_{PE275} = 2$.

Instruments

A semi-structured faculty interview guide was used. Typically, all participants were asked a total of nine questions. As per the nature of the semi-structured, qualitative investigation, follow-up questions were asked to obtain clarification when required or to further explore participants' comments and insights. The questions are presented here:

1. How does this room make you feel?
2. In the survey you stated that you [loved/hated] this room; can you expand on that and let us know why?
3. What is your general opinion of this room as a teaching/learning space?
4. Before teaching this course, what were your expectations for teaching in this room? In what ways were your expectations met or not met?
5. Knowing what you know now about this classroom, what changes would you like to make to this room in order to make the teaching and learning more successful?
6. Please describe at least one situation in which this room worked well for you. Provide as many details as possible.
7. Please describe at least one situation in which this room did not work well for you. Provide as many details as possible.
8. Describe your ideal classroom.
9. Many students say PE250 is one of their favourite rooms on campus. Why do you think that is?

Questions 1 through 7 were considered primary questions, as they primarily related to the specific room in which the faculty member taught (PE250 or PE275). Questions 8 and 9 were considered secondary questions, as they pertained to more general topics (ideal classroom, PE250 as a favourite student room). Follow-up topics of interest to the research team were (a) aesthetics, (b) ceiling height, (c) the conjunctive use of whiteboard and projection, (d) lighting

control, and (e) the room layout. In addition to the qualitative questions, a brief oral survey was administered prior to the interview. This survey contained three sets of questions regarding (a) the general effectiveness of the teaching space, (b) satisfaction with several physical items, and (c) ease of use of several technology features of the room.

2.3 Analysis

Faculty interviews were audio-recorded for note-taking purposes and then transcribed. Data were analyzed using a thematic analysis process (Braun & Clarke, 2006) with assistance of the qualitative data analysis tool NVivo 10 (QSR International). It must be noted that NVivo is a program that allows for digital organization of the data, and does not in any way offer interpretations. All interpretations constitute the work of the author. Both deductive and inductive results are reported. Deductive data are those themes that stem from direct questions and constitute the answers to the questions asked. Inductive data are those themes that emerged throughout the analysis.

3. Faculty Survey Results (abbreviated)

This section highlights two results from the faculty survey that was administered orally prior to the interview. Because a new instructor had replaced an original one, the original instructor was not given the survey. Therefore, results from four faculty members are reported, $n_{PE250} = 2$, $n_{PE275} = 2$. Three out of four faculty members had more than eight years of higher education teaching experience, whereas the fourth had less than two. One participant was a sessional, one an academic assistant, one on the tenure track, and one tenured faculty. Only a single faculty member requested to teach in the particular room, PE250 in this case. In addition to demographic information, this survey contained three sets of questions regarding (a) the general effectiveness of the teaching space, (b) satisfaction with several physical items, and (c) ease of use of several technology features of the room

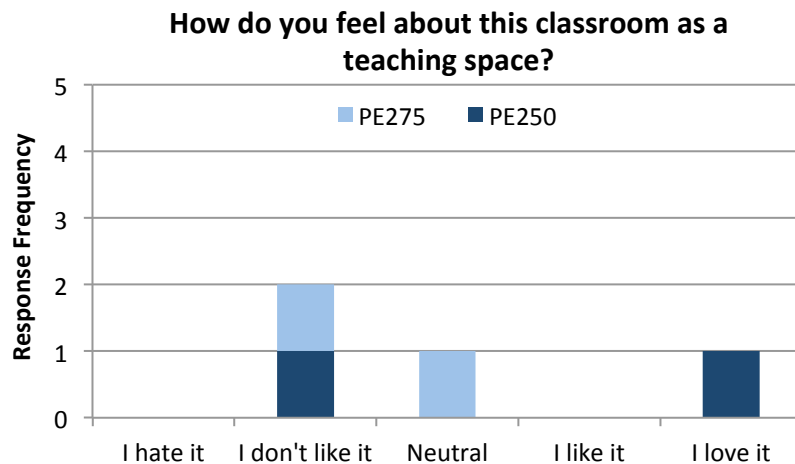


Figure 1. This response graph illustrates the answers that were followed up in the interview. Participants were asked to rank their feelings about the classroom on a scale of 1 (*I hate it*) to 5 (*I love it*).

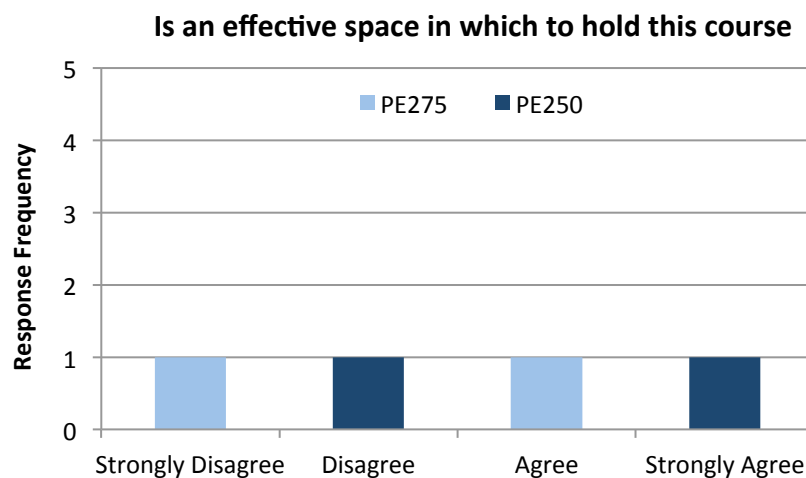


Figure 2. When asked whether they thought this classroom was an effective space in which to hold the course, participants in both rooms could be found at the opposite end of the spectrum. This question is exemplary of the response variability for most questions in the survey.

4. PE250 Faculty Interview – Deductive Analysis

This section describes answers to the primary questions asked in the interview of three instructors in PE250. These questions were:

1. How does this room make you feel?
2. In the survey you stated that you [loved/hated] this room; can you expand on that and let us know why?
3. What is your general opinion of this room as a teaching/learning space?
4. Before teaching this course, what were your expectations for teaching in this room? In what ways were your expectations met or not met?
5. Knowing what you know now about this classroom, what changes would you like to make to this room in order to make the teaching and learning more successful?
6. Please describe at least one situation in which this room worked well for you. Provide as many details as possible.
7. Please describe at least one situation in which this room did not work well for you. Provide as many details as possible.

Question 1: How does this room make you feel?

When asked about how this room made them feel, instructors responded generally positively with one exception. One instructor remarked that he "really liked" the room, even though he was unable to identify the underlying causal factors for this sentiment. He further specified that he liked the room "as a large lecture theatre." Another instructor stated that it was the best room currently available on campus. He was adamant that, given the size of the room, he would not know how anyone "could do a better job with this space." Instructors concurred that it was "a nice space to teach in" and that they felt "very comfortable teaching in [this] classroom." Only one instructor noted that she felt nervous in the room because of its nature as a large lecture theatre. She suggested that her opinion could be due to also having been a student in the room, at which time she "hated that room."

Question 2: You stated that you loved/hated the room; can you let us know why?

In the faculty survey, instructors were asked to rank their opinion of the room on a scale of 1 (*hate it*) to 5 (*love it*). In the interview, instructors were asked why they had chosen their particular answer to that question. To reiterate, two out of three instructors interviewed were satisfied with the room, whereas one was not. When questioned about the reasons for those sentiments, one instructor cited the "ease of Crestron® use," finding the room straightforward, and "know[ing] what [he was] getting into when [he goes] into this room." Another reason cited for liking the room was that the lighting control provided relatively many options, the ability to walk around, and the use of the SMART Podium™ interactive pen display. The instructor who disliked the room cited as a reason that the room was too big and did not facilitate her teaching style, as she expected interaction and engagement from students and wanted them to "jump in" when questions were asked. She explained that students might not feel comfortable doing so due to the audience of 300 students in the room. However, she conceded that this might be a function of the number of students of class and not entirely due to the room size. Specifically, she explained that the class might feel more personal with only 15 students.

Question 3: What is your general opinion of the room as a teaching and learning space?

General opinions of PE250 as a teaching and learning space were also not unanimous. However, students' ability to see the instructor and course content from any seat in the room were considered a good aspect by everyone.

Instructor 1: It's all right; I don't think it's ideal The thing I do like about it, that the desks are graduated. So that everyone can see.

Instructor 2: This is the best space that we have at this university. There is absolutely no doubt in my mind. Not only for lecture like mine which is ... writing on the board, but I think for PowerPoint it is fantastic. The design of the room is really, really good. Students never complain that they don't see something.

Question 4: What were your expectations for teaching in this room?

Instructors were asked what their expectations were for teaching in PE250 and how those expectations were or were not met. One instructor expected the room to have a warm atmosphere and to be comfortable in it. A second instructor thought that there would not be much interaction or engagement with students, but was positively surprised:

Instructor 1: I think expectations were that I wouldn't be able to recognize students and I wouldn't be able to get to know as I have with smaller classes. And I think that some ways that's true, but ... they've kind of proved that wrong, so it isn't completely a function of the space, it's also a function of [them being] engaged or not In some ways I think my vision of what the room would be as an instructor was very different, coming from a student's perspective to an instructor's perspective I was pleasantly surprised.

Question 5: What changes would you make to make teaching and learning more successful?

When asked about what changes they would like to make to the room in order to make teaching and learning more successful, two instructors stated that the lighting quality and control could be improved. Specifically, the fluorescent lighting was disliked. Further, when lights were turned off in the front of the room, instructors felt that they were in the dark.

Instructor 3: The lighting is good, but I think there is a point at which some students think it's too dark, or where I feel it's too dark. So if I'm teaching at the front of the room and I want students to see the PowerPoint slides, some students want the front set of lights off, to me that's too dark, so I keep those on, but I think that might be a little bit too bright for some students.

Instructor 1: I would like the lights to be more adjustable, there are ... rows 1 and 2, 3 and 4, 5 and 6, that's how it's divided I like it to be a little bit

darker so [the students] can focus, their eyes are drawn to the light of the slides I feel like when I have rows 1 and 2 off, it's almost too dark sometimes, so I wish I could just have row 1 off and see if that might change I do think sometimes it's hard to focus on the slides, especially if we are watching a film and maybe it's not that good of quality.

If given one change to make, the third instructor would have liked to see the room be of even larger capacity. He would like the room to be at 400 seats, and explained that the campus had been denied a conference assignment due to the space limitations. He further remarked that in the future he could see the need for a 400-seat classroom as the university expands.

Question 6: Please describe at least one situation that worked well in this room.

Participants were asked about situations in the classroom that worked well and about those that did not work well. Two answers pertained to those times when the students could be engaged well:

- Instructor 3: For me this room works relatively well for ... classroom discussion Students highlighting their own ideas and other students ... across the room responding to those ideas. I think it works relatively well. Given the size.
- Instructor 1: I've had a few classes that I think went really well. ... On those few days where I think it's gone actually really well, I've gotten people engaged enough that people all over the classroom have been willing to participate and so, we had people from the very back row all the way to the front rows and throughout the class add to the discussion and I think that went really well.
- Interviewer: So just to follow up on that – does the room lend itself fairly well to an all class discussion.
- Instructor 1: No. It does not. I guess that would be one of the things that I am disappointed about. As I mentioned earlier, I do like to get people's opinions and I do ask a lot of questions and what I ... have found, ... I'll be focusing on the far right side – that's where the discussion is coming from – and then the people on the far left side will ... get distracted.

The third instructor was mainly focused on his perception of the room, but noticed that the room did not seem to facilitate interaction among students:

- Instructor 2: I go there happy and come out happy. I don't hear any complaints from students. [They] hardly talk to each other. I don't know why, but they don't.

Question 7: Please describe at least one situation that did not work well in this room.

When asked about what did not work well in the room, two instructors mentioned that teaching could not be effective in instances where the technology did not cooperate, which left them frustrated. It was also reiterated that the lighting control was suboptimal in this room. Further, one instructor remarked that it was sometimes difficult to hear student comments as an instructor at the front of the room due to the distance between students and instructor.

5. PE275 Faculty Interview – Deductive Analysis

This section describes answers to the primary questions asked in the interview of two instructors in PE275. These questions were:

1. How does this room make you feel?
2. In the survey you stated that you [loved/hated] this room; can you expand on that and let us know why?
3. What is your general opinion of this room as a teaching/learning space?
4. Before teaching this course, what were your expectations for teaching in this room? In what ways were your expectations met or not met?
5. Knowing what you know now about this classroom, what changes would you like to make to this room in order to make the teaching and learning more successful?
6. Please describe at least one situation in which this room worked well for you. Provide as many details as possible.
7. Please describe at least one situation in which this room did not work well for you. Provide as many details as possible.

Question 1: How does this room make you feel?

When asked about how the room made them feel, instructors answered were diverse and ranged from "like I'm in a straightjacket" to "comfortable." One instructor further commented on how the room was not made for 180 students, and student occupancy should not go beyond 120 in PE275. This instructor explained that when filled to capacity, the air quality was very poor by the end of a class.

Question 2: You stated that you loved/hated the room; can you let us know why?

Instructors were asked to specify their sentiments about the room as ranked in the survey. One instructor was primarily dissatisfied with the room layout, whereas the other one was mainly frustrated with the lighting control.

Instructor 4: The room is deep and narrow From my point of view, you lose contact with the back [It is] difficult to have contact with everybody all the time, you literally have to direct your attention to various segments of the room. I mean that's true of all the big rooms. But this one for some reason felt quite awkward.

Instructor 5: I think the basic layout is fine, I find the lighting very frustrating, because ... [there] doesn't seem to be a fine enough control between having way too much light ... or it's just too dark. So if I'm not constantly trying to readjust the lights, I think the students are sitting mostly in the dark or there's too much light for them to adequately see the board properly, or ... what's on the screen.

Question 3: What is your general opinion of the room as a teaching and learning space?

The opinions about this room as a teaching and learning space were also rather divergent. One instructor explained he could not use his style of teaching in this room "to any great effect,"

which he attributed to the layout of the room as well as to the inability to use the screen and the whiteboards simultaneously, which he would have liked to do. The other instructor conceded that this room was better than some others she had taught in and was always comfortable with teaching in this space.

Question 4: What were your expectations for teaching in this room?

Expectations before teaching in the room were generally not met. One instructor thought "the physicality of the room ... would be better than it was," and cited the constraining front of the room as a negative feature. He explained that when he needed to walk out from behind the podium, he had to go to one side of the room or the other, which consequently meant the students on the opposite side could not be addressed. The other instructor expected to "be able to come in, set up relatively quickly, [and] have everything going." She elaborated that she stopped using the technology such as VCR and DVD in the room and preferred to bring her own to ensure that everything would be easily useable and in working condition.

Question 5: What changes would you make to make teaching and learning more successful?

One instructor was asked about what changes he would like to make to the room. He specified that he would like to "take out the first two rows [and] move the screen somewhere to the side." He further commented that the room shape is "too long for [its] width" and he would like to take out the back two rows.

Question 6: Please describe at least one situation that worked well in this room.

Both instructors asked to describe a situation that worked well in the room initially paused before coming up with an answer. This hesitation may indicate that this classroom may not have worked well in many situations. However, both instructors were able to generate responses. One instructor highlighted the ability to show videos through the web worked well in this classroom. The other instructor commented on the tiered nature of the seating, which she said helped her to see students, especially when they raised their hands for questions.

Question 7: Please describe at least one situation that did not work well in this room.

Instructors easily generated answers to the question of what did not work well in the room. Interestingly, both instructors also mentioned negative elements of the situations that worked well as part of the previous question. While one instructor stated that the room worked well for showing videos, he also said that it was impossible to use the projection and the whiteboard at the same time, which he would have liked to do:

Instructor 4: If you go one route or the other route, you leave the screen up and do the entire lecture on the whiteboards, it's got a good set of whiteboards. If you leave the screen down and do entirely something with PowerPoint ... it works well. But if you ever have to mix the two, it's awkward.

The other instructor, while stating that she liked how well people can be seen, also mentioned the drawbacks of the projector light and how that affects the back of the room:

Instructor 5: I do have to move around a bit, again, to avoid the camera light or the

projector light. But you can usually see if people have something to say
... Again, if the back was just a little bit easier to monitor it'd be nice.

Other drawbacks of the room were (a) the location of the door, causing late-coming students to distract both the instructor and the class by walking across the front of the room, and (b) the lack of engagement in student discussion in this classroom due to the layout and the inflexibility of the linear desks.

6. Faculty Interview Common – Deductive Analysis

This section describes answers to the secondary questions asked in the interview of all instructors in both rooms. Because these questions are not room specific, they are combined in this section. These questions were:

8. Describe your ideal classroom.
9. Many students say PE250 is one of their favourite rooms on campus. Why do you think that is?

Question 8: Describe your ideal classroom.

Three out of five instructors were asked about what their ideal classroom would look like. This was a general question, and it was left up to each instructor whether it was for the class they were currently teaching, another class, or in general. All three instructors mentioned that their ideal classroom would have to include the ability to engage students either through smaller group discussions, activities, flexible furniture, or physical proximity to the students.

Instructor 1: The ability to move desks around or out of the way I like to get students to stand up and if we imagine a virtual continuum in the middle of the classroom, you have to place yourself, talk to your fellow students. You can't do that in this kind of a classroom where the desks are stuck into the ground No microphones. I think the ability to just be able speak and everyone [can] hear you and then also the same [ability] for students I do think that discussion is really, really important.

Instructor 5: I think if there was some flexibility with the furniture more so than what there is there, that could be a real bonus. I don't know how you'd that if it was tiered exactly. There's really not much flexibility as far as changing up the seating to facilitate smaller group discussion or anything like that.

Instructor 4: I want them all within 20 feet of me. I don't want any barriers between me and them A room that is wider rather than deeper. Just to ... keep the experience as intimate as possible. You wanna reach these kids, you wanna be able to read [th]em, for body language ... in this room I couldn't tell what the kids in the back were experiencing at all.

Other comments concerning the ideal classroom pertained to natural light including the ability to control how much light is let in; a smaller capacity of possibly 20, 40, 50, or 60 students; Crestron® controls within reach of the instructor; and a room layout that was wide and shallow rather than deep and narrow. Specific requests included tiering of the rows, the ability to monitor the document camera on the instructor station, ample whiteboard space, and student seating far enough removed from the instructor so one could walk in front of the instructor station.

Question 9: Why do you think students consider PE250 as one of their favourite rooms?

Prior to conducting the Fall 2013 research, LEE had received unsolicited comments from students that PE250 is a well-liked room. Instructors were subsequently asked why they think students might cite it as one of their favourite rooms. Between the five instructors interviewed, all suggested a different reason. Those reasons were (a) the U-shape of the room, natural light, and warm atmosphere; (b) invisibility among other students; (c) good sightlines; (d) the décor; and (e) the room being the best room of that size on campus. Natural light was the only item that was seconded.

7. Faculty Interview Both Rooms – Inductive Analysis

This section describes mainly inductive themes. Inductive themes are those that emerged without specifically asking about the topic. Here, answers included those spontaneously generated without a specific question preceding them. Further, this section also includes answers to very specific follow-up questions that were asked of one or few instructors. Content pertains to classroom technology, physical aspects of the room that are perceived, room layout, and the instructor-student relationship.

7.1 Classroom Technology

Instructors commented on the classroom technology at non-specific points in the conversation. Generally, instructors highlighted the interaction with technology at the instructor station.

Instructor 1: No, maybe, I feel like there's a lot of random stuff on the desk and in the drawer. As a new instructor, I'm like, what's all this stuff? What should I be using this? Do I need this? Should I touch this? Is this for me? So maybe for new instructors, have a short workshop at the start of each semester [on] what to do with the document reader, what to do with the all the stuff. Even though I have used technology, I haven't actually used the SMART Board. I've seen it; I've never actually used one.

Instructor 4: I've never had to try to do anything too fancy [in PE250] either. But I assume they probably have all the same kinds of technology. It's my fault that I don't know how to run it. But that could be something I might look into in the future. 'Cause I think there is some benefit for having ... that document camera, I had no idea what it was or what you would use it for ... My expectations are that I should be able to come in, set up relatively quickly, have everything going. I've stopped using the VCR and DVD that are in that closet. And started to just bring all of the necessary bits with me, so I know I can easily get them going. Because sometimes that has been a problem for me in the past, making sure everything is going the way I'm hoping it'll go. I found that panel, when they added that, that was a big bonus They did, I think, have it first in PE250. And then they brought it into this classroom and that made things lots easier, because it is fairly intuitive how to get around on the panel. And I've never had to call anybody for classroom support because I couldn't get something working. It just sometimes takes a while.

7.1.1 Audio

Three instructors generated comments on the audio in the two rooms. One comment pertained to the user-friendly control of the microphone in PE250. Another instructor was disappointed that class discussion did not work well in that room because of the inability of students to hear each other. The same instructor also described that her worst situation in the room was related to the microphones not working and her having to dismiss class early because students were unable to hear her. The topic arose again when asked about her ideal classroom:

Instructor 1: No microphones. I think the ability to just be able speak and everyone hear you and then also the same for students because they don't get microphones because I do think that discussion is really, really important. People get really bored just listening to my voice. So being able to have that discussion.

Lastly, the third instructor mentioned that in PE275 the audio was "odd:"

Instructor 5: And the audio is odd. Occasionally, especially for the laptop, when you're trying to get audio adjusted, sometimes it comes on way too loud I teach in there all the time, so I think I can sort of pick a level, and sometimes it's way too loud and sometimes it's not loud enough. So, I'm not sure what the difference is, it might be the actual thing I'm trying to play has different component to it. But I have occasionally blasted their little eardrums, and I feel bad for that.

7.1.2 Crestron®

Two instructors liked the Crestron® control panels in both rooms, particularly in PE250, which was suggested could be due to the fact that the controls were better laid out.

7.1.3 Document Camera

Four instructors also commented on their use of the document camera. Two instructors stated that they did not use the SMART Podium™ or the document camera in these rooms. A third instructor who used the document camera extensively highlighted some of its flaws from a user standpoint:

Instructor 4: You can always go to the document camera and write your notes that way. The problem becomes that you have no monitor to tell you what the students are actually seeing when you use the document camera. So you literally have to turn around, or the students have to tell you, you've gone off the bottom of the screen, so to speak. There is no comfortable way to do that I would argue you need a place to sit so that your handwriting flows normally My handwriting is bad to begin with, ... so if I'm standing up doing all this stuff it just gets worse. ... I mean, I would not be opposed to writing notes out using the document camera, but it's just not comfortable and ... logistically, you always have to look over your shoulder at the screen to see what's going on. It's not arranged comfortably to do that.

Further, when talking about a situation that did not work well, a fourth instructor commented on the document camera:

Instructor 1: I wanted to show them a list with a the document viewer and I had it

under there and it wouldn't focus and I'm not sure if I was doing it completely wrong, which is another possibility, because as I was doing it, I realized I have never actually used one of those before. I pressed the *on* button, kind of focused it in, but it was kind of like jarring a little bit, and I'm not sure if...

Moderator: So it didn't auto-focus?

Instructor 1: Not really, no and I was kind of pressing all the buttons to see if anything would work and it kind of worked but it would only focus on one line at a time so I had to kind of like move the paper to get into that area of focus, so that was kind of weird.

Lastly, one of these instructors was not aware of what the document camera was prior to the interview.

7.1.4 Information Technology

Instructors seemed generally unhappy with the overall information technology in this room. One instructor complained about the inability to install a different browser on the classroom computer. Two senior instructors conceded that the rooms had come a long way and initial start-up technology problems were no longer present. One instructor preferred to bring her own laptop to class in order to get around technical issues that might prevent her from giving an effective lecture, such as video not working.

7.1.5 Lighting

Two instructors were specifically asked about lighting in the rooms, while the others self-generated comments on the topic. One instructor was frustrated by the lighting control in PE275:

Instructor 3: There is no indication of the lighting. That's something that I find not highly problematic, but more annoying. 'Cause every time I adjust the lighting, I'm not sure. I think it's reversed actually.

Instructors also commented on the natural light in PE250. One instructor liked how it was done in that room. Another instructor commented that sometimes a room needed to be completely dark, which PE250 did not allow. He thought the natural light sometimes caused a glare on the board, and that it was not conducive to looking at dark images for the subject matter he taught. Another instructor in PE250 stated he liked the relatively numerous options he had for lighting control in the room. However, he then elaborated that there was not a fine-enough gradient for controlling the lighting at the front of the room, which was confirmed by another instructor.

Instructor 3: The lighting is good, but I think there is a point at which some students think it's too dark, or where I feel it's too dark. So if I'm teaching at the front of the room and I want students to see the PowerPoint slides, some students want the front set of lights off, to me that's too dark, so I keep those on, but I think that might be a little bit too bright for some

students. ... As an instructor, I really do not like feeling that I'm in the dark. And I'm not in the dark, but it's darker. I really do not like that.

Instructor 1: I would like the lights to be more adjustable, there are ... rows 1 and 2, 3 and 4, 5 and 6, that's how it's divided I like it to be a little bit darker so [the students] can focus, their eyes are drawn to the light of the slides I feel like when I have rows 1 and 2 off, it's almost too dark sometimes, so I wish I could just have row 1 off and see if that might change I do think sometimes it's hard to focus on the slides, especially if we are watching a film and maybe it's not that good of quality.

In PE275, the lighting control was also argued to be an issue:

Instructor 5: I find the lighting very frustrating, because the ... [there] doesn't seem to be a fine enough control between having way too [much light ... or it's just too dark. So if I'm not constantly trying to readjust the lights I think the students are sitting mostly in the dark or there's too much light for them to adequately see the board properly ... what's on the screen. And I do use the PowerPoint all the time Although no one's complained to me about it. I do try to fiddle with the lights to make it better, but I wish there was ... the pot-light kind of turn it up, turn it down to an adequate level, so I think that would really make a difference in that classroom I wish we could do something about the [projector] light shining in my eyes. I find that really hard when you got a projector going and all you can see is the light from the projector.

However, this last instructor found that the lighting control in PE250 was "fairly fine" and she had no problems with the lighting in that room at all.

7.1.6 Projection/Whiteboard

Instructors did not comment much on the projection in the room. When two instructors were asked specifically if they liked that the ceiling height in PE250 allowed for bigger projection, they both agreed. One instructor argued that in a rectangular room, one should have two projections, whereas in a semicircular room, one would be sufficient. When asked if the whiteboard space was useful when the screen was down in PE275, one instructor disagreed, the other noted that she never used the whiteboard. The first instructor elaborated that he preferred to use the document camera to the whiteboard. All four instructors asked about the whiteboard negated using it much for teaching in either room. Two instructors also self-generated comments about the projection and whiteboard in the rooms at different points during the interview. One instructor was adamant about having the projection screen "off to the side" in the room. When asked about the motivation behind that statement, he stated:

Instructor 4: You can go into a class with a complete ... PowerPoint presentation. What you wanna be able to do is when a question arises that's not in your

presentation, you wanna be able to go somewhere and have that interaction with the bulk of the students and that usually involves some kind of writing At the same time, ... even if there's no questions, you wanna be able to depart from your lecture to talk about specifics that you don't necessarily wanna encapsulate in a PowerPoint presentation. So if I wanna go sideways and draw a little cartoon of something that I just thought of, or even had thought of prior to teaching the lecture, I'd like to have the space to do that. When I do PowerPoints I try to put the major points in there and then deal with the one-offs separately, or specific examples and those kinds of things.

The same instructor also preferred having ample whiteboard space. As previously stated, another instructor was dissatisfied with the projection light in PE275 shining into her eyes when standing behind the workstation.

7.1.7 SMART Podium™

Except for one instructor interviewed, no one used the SMART Podium™ in these two rooms. The instructor who used it made heavy use of it:

Instructor 2: The fact that I can really write on the symposium [SMART Podium™] is the most important thing for my lectures. I cannot have a PowerPoint, my lectures has to be written. ... The fact that there is [a] SMART board plus symposium makes my job much easier, because what I do is pick out the most important things from what I am going to lecture, put it in a file and about 48 hours before the lecture, I send [it] to students. And I call it *fill-in*, so what they do is print that one thing and when they come to the class, they write down what I write on the board.

Two instructors thought it would be good to be introduced to new technology in the room prior to the semester start:

Instructor 1: So maybe for new instructors, have a short workshop at the start of each semester [on] what to do with the document reader, what to do with all the stuff. Even though I have used technology, I haven't actually used the SMART Board.

Moderator: So the [sym]podium, you didn't bother trying to...

Instructor 1: I haven't done it. I don't want to embarrass myself in front of all the students, so maybe just a short workshop to help new people who have never used that stuff.

Another instructor who was unsure of what all the "stuff" on the workstation was for, including the SMART Podium™.

7.2 Physical Aspects

Several physical aspects of the rooms surfaced during the discussion. These included aesthetics, the room atmosphere, climate, ceiling height, sightlines, and noise among others. Typically, one or two instructors commented on each of the items.

7.2.1 Aesthetics

Merriam-Webster defines aesthetics as: "a particular theory or conception of beauty or art; a particular taste for or approach to what is pleasing to the senses and especially sight." When asked about aesthetics of PE205, most instructors proposed that PE250 was overall aesthetically pleasing. Contributing factors were the warm atmosphere, the natural light, the wood panels at the front and in the ceiling, the shape of the room, the ability to circulate around the back of the room, and the amount of air space. Only one instructor was slightly dissatisfied with the aesthetics:

Instructor 1: The chairs don't match. It's all right it's just like a bland, academic, sterile colour scheme that I think a lot of lecture theatres have.

However, she also conceded:

Instructor 1: I think if you compare this room to the average classroom in say, Uhall, I can see why students would prefer this room aesthetically. And visually, it's much clearer to see; you're tiered, you have the wood, so it looks nicer, classier.

Other descriptions of the aesthetics of the room were described as "more pleasing than usual," "quite attractive," and "beautiful," whereas PE275 was called "ugly" and "claustrophobic." However, one instructor also made the following comment:

Instructor 4: Well just for contrast, all of the graduate level courses I took took place ... in a basement of a ... 60-year old building. Had absolutely nothing going for it aesthetically, and yet I have fond, fond memories of those classes. And it had more to do probably with the class sizes, so there's no more than 15 people in a room like that. And the teachers. It didn't have a great deal to do with the aesthetics of the room in that sense.

7.2.2 Atmosphere

One instructor specifically made a reference to the atmosphere of PE250. He described that the room felt "warm" for a large lecture theatre. Another instructor described that she felt "comfortable" in both PE250 and PE275. PE275 was described as outright "ugly" by a third instructor.

7.2.3 Ceiling Height

Most instructors were asked about the rooms' ceiling heights in detail. The ceiling height in PE250 was suggested to be "less claustrophobic" and it was commended that it allowed for an uncompromised air space. When prompted, another instructor agreed that the ceiling height

facilitated better projection:

Instructor 3: And now that you mentioned ... how high the projector screen is on the wall, I really like that, how it is projected on the wall. It is quite high, relatively. And I think that just improves the sightlines for students.

7.2.4 Climate/Air

Unsolicited feedback for air quality in PE250 pertained to the amount of air volume relative to the occupancy available in this room, which was highly commended. Two instructors mentioned that in PE275, it was typically "very stuffy" by the end of a lecture. When asked if the volume of air space made a difference, one instructor said:

Instructor 2: Absolutely, I mean, if you put students in a hot room, of course they don't feel comfortable, you put them in a cold room, they don't feel comfortable, put somewhere stuffy, ... they don't feel comfortable. When you give them a room that is really a good room they feel comfortable. They are fresh for 50 minutes, they listen to you, they don't feel uncomfortable.

Another instructor stated she wished she did not feel quite as warm after teaching in PE275.

7.2.5 Clutter

Two instructors complained about clutter in both rooms. An instructor in PE250 thought the workstation contained a lot of "stuff," of which she did not know whether she was allowed to or supposed to use it. Another instructor said PE275 "could be cleaner," and mentioned an instance where a large coat rack was placed and left at the front of the room.

7.2.6 Noise

One instructor mentioned that the doors in PE250 were rather noisy and tended to "slam shut" when people came in late, which was distracting.

7.2.7 Sightlines

Instructors generally agreed that sightlines in PE250 were superior to PE275 and to rooms with low ceiling height in Uhall. This included the ability for students to see each other and for the instructor to see students. All three instructors teaching in PE250 agreed that sightlines were good in this room. "Nobody's head [being] in the way," the "huge screen," a "full view of the teacher and the screen," were cited as some of the examples of good sightlines. One instructor added that "students never complain that they don't see something," and another described one had "almost a bird's eye view in some ways." This was starkly contrasted with PE275:

Instructor 3: One thing that bothers me about 275 is how the screen is ... maybe two or three feet out from the wall. So any student sitting on the far left front row or far right front row, if I'm writing on the board, there's a big problem ... for students to see that.

Instructor 4: You've got the screen immediately behind you, so you're always casting a shadow on the screenYou've got the screen sitting right in the middle of the whiteboards, you've got a room that's quite broad, and so you cannot go to the sides of the whiteboards with the screen down and do anything without eliminating one side or the other side of the room in terms of what they can see.

However, one instructor commended PE275 for sightlines as well:

Instructor 5: Well, I guess if students are asking questions, the way it's tiered, you can see hands going up even at the back. I do have to move around a bit, again, to avoid the camera light or the projector light. But you can usually see if people have something to say. The way you scan the classroom there, I kind of do appreciate that you can see people quite well. Again, if the back was just a little bit easier to monitor it'd be nice.

7.2.8 Sound

Three instructors commented on sound in PE250 and PE275. One instructor would have liked to have a microphone feature for students in PE250, as she said other audience members are often unable to hear student comments. She added that she did not always remember to repeat student answers. Another instructor supplemented this comment by saying that he was not always able to hear students speak, which he attributed to the large nature of the room and his distance to students.

7.3 Room Layout

Room layout was an area instructors mentioned throughout the interviews. The instances pertained to capacity, circulation, tiering, and furniture, all of which will be elaborated in the following section.

7.3.1 Capacity

One instructor was rather adamant that the campus needed a larger-capacity space, with an ideal capacity of 400 seats. He elaborated that such a space would serve not only as a teaching space, but also as a venue for larger events such as conferences. An example he cited was that the university was denied holding a conference because there was no space on campus that could accommodate 400-500 participants. The instructor added that his department would like to see the conglomeration of multiple introductory sections of the same course to produce a single course. Other instructors, however, were disinclined to see larger lecture halls, and were somewhat dissatisfied with the capacity of PE250. One instructor described his ideal classroom with a maximum of 20 students, and a second instructor preferred to teach classes of 40 students in a room with moveable furniture. A third instructor favoured the suggested idea of having a smaller version of PE250 that held only 100 students, but retained the semicircular configuration. On the flipside, one instructor stated that PE250 could easily become vacuous if not filled nearly close to capacity.

7.3.2 Circulation

Two instructors in PE250 stated opposing views on the ability to circulate in the room. One instructor was dissatisfied with the ability to circulate among students:

- Instructor 3: Something I have noticed in that room is, there isn't a lot of space between desks. I used to not do Moodle exams, instead I would [do] in-class exams. I always like to actually physically give a student to an exam. So I'd walk between the aisles, and that was difficult.
- Moderator: More so or less than PE275?
- Instructor 3: I didn't do it in 275, so I don't know ... whether it would be similar. I would suspect it might be similar. The dimensions between the desks.

A second instructor directly opposed this statement and described how easy it was for him to circulate and distribute assignments:

- Instructor 2: For exam time when I walk around ... the design is very good. Even if students are sitting I can walk between them. Which is important. Also you want them to pass on their exam papers. If there was only two sections, it wouldn't be as good as it is now So this room gives me the ability to go anywhere in the room ... I can easily pass the questions from my exams to students.

He added that it would be great to have a place at the front of the class to lay out assignments or exams for students to collect. While he was able to handle it using the tables by the entrance, he thought that there might possibly be a more convenient method and would like the room to facilitate that.

In PE275, circulation was perceived as more of a problem, as this instructor explained:

- Instructor 4: You've got a single entry, which is right in front of the class, so students who come in late are literally walking right in front of me. Tremendously awkward [The] student benches, in the front come too far forward. So you look at the wings, you got people basically almost equal with you in terms of the position in the room. That's awkward. At least in 250 you don't have students for the first 10 or 15 feet and they actually curve around you in some sense, where this doesn't happen [I]t's completely impossible in 275 to walk in front of the podium and do something that they can see. You can't even walk there I've had kids walk right up in front of the podium to the centre at the front bench and kick their legs over and sit down [I]f it had a rear entrance to it, a lot of that would go away.

He further described the room as claustrophobic and having a "narrow tunnel kind of feeling to it," which he partially attributed to the low ceiling in the back.

7.3.3 Student Furniture

Instructors offered both satisfactory and dissatisfactory opinions on the furniture in the rooms. In PE250, one instructor explained that she preferred single, moveable desks to fixed student benches, while retaining the tiered layout of the room. However, she was not entirely certain on how such a layout could be implemented. Another instructor liked that the room did not have chairs that were affixed to the benches, and thought it would be conducive to student freedom. In PE275, to reiterate, one instructor thought the student benches came forward too much and interfered with the instructor's space. Here, the second instructor also thought that a tiered room with moveable furniture would be great, but was not sure how that would be feasible.

7.3.4 Tiering

Instructors mostly liked the fact that the rooms were tiered. They commended the ability to see students' faces. However, in PE275, there was some difficulty with seeing students in the very back of the room.

7.3.5 Workstation

All instructors in PE250 explained they primarily taught from behind the workstation to advance their slides or write on the SMART Podium™. One instructor commented that he liked the distance between the workstation and the students. A second instructor thought there was a lot of clutter at the workstation. In PE275, the distance between the workstation and student desks as well as the surface space on the workstation were considered inadequate.

7.4 Student-Instructor Relation

Without solicitation, most instructors commented on some aspect of the relationship to their students in the classroom. These aspects included student attention, engagement, and interaction with the instructor and among each other.

7.4.1 Attention

Two instructors in PE250 agreed that students might feel a sense of invisibility and an associated "perceived freedom" in the classroom, and therefore engage in non-course-related behaviours, come late, or choose not to participate. One of the instructors pointed out that students were not aware that the instructor noticed them in the room. They only realized that when the instructor walked up to them on his path to circulate the room. An instructor in PE275 stated that she was not sure what students in the back of the room were doing during class time because of limited visibility to the back.

7.4.2 Engagement

Two instructors, one in each room, commented on student engagement. Both thought that the room was inconducive to engagement. The instructor in PE250 explained that she thought only students in the front rows were engaged, and because of their engagement, she perceived that she neglected students in the back of the room. She thought students' lack of participation might be partially a function of the size of the room and of students' willingness to engage. The instructor in PE275 described how the layout of the room did not foster engagement:

Instructor 5: I suppose it's not the kind of classroom where you could get students engaged in sort of a local discussion, because of the way it's set up in a linear row, it's really hard for you to talk to anybody beside people on just either side. It's something I've always thought about maybe using as a potential tool, is some kind of discussion group at a certain point in the classroom, but [in] this classroom [it] is impossible to do such a thing, because there is no flexibility with the seating to make that actually work.

7.4.3 Interaction

One instructor in PE250 was asked whether the semicircular layout of the room contributed to better conversation and answered that it might be the case, especially because people are "face to face" with each other. Another instructor thought that personal interactions with students were very limited in a class of 300, and that students felt uncomfortable answering questions because of the class size. She eloquently expressed why she thought students liked the room:

Instructor 1: I think it's their favourite classroom, because ... they think they are invisible in that classroom. Because there's no pressure to participate, there's no pressure if you come in late, you're just a face in the crowd ... they think I don't recognize them. They also think that I don't see their faces. They think that I can't see them on their phones, that I can't see them listening to their ear buds, or watching something on their laptops. So I think they ... like ... the perceived freedom of PE250 to either pay attention or not pay attention, come early, attend and not attend. It's ... at their leisure ... Of course, I do recognize students who are texting, I do come to know their faces and if they are paying attention or not. But I think as a student you might feel a little bit more free to either participate or not participate. Less pressure.

Another instructor in PE275 emphasized the importance of interaction with students as well:

Instructor 4: Just to... for lack of a better phrase, keep the experience as intimate as possible. You wanna reach these kids, you wanna be able to read [th]em for body language and all that kind of stuff, in this room I couldn't tell what the kids in the back were experiencing at all.

7.4.4 Class Size

Instructors further commented that some of the negative features of the large rooms may be primarily associated with having to teach a large class, which they found not particularly favourable in the first place. Only one instructor advocated having the possibility of even larger class sizes.

7.5 Teaching

All instructors commented on their teaching styles and how they fit or did not fit with the rooms. Instructors in PE250 unanimously agreed that the room was primarily a lecture theatre

and, as such, worked well. However, one instructor consented that it also worked relatively well for whole-class discussion, whereas the two others thought it did not work particularly well for anything but lecture. An instructor in PE275 found that the room did not facilitate his teaching style at all, saying that he was not able to use his style "to great effect." The second instructor in PE275 also stated that "it's not the kind of classroom where you could get students engaged in sort of a local discussion," which she would have liked to try.

8. Summary

8.1 PE250

Generally speaking, instructors liked PE250 as a teaching space. When it was disliked, it was mainly due to the fact that instructors were not fond of teaching a 300-student class. Most instructors reported that the technology in the room was easy to use. Instructors found it somewhat difficult to achieve student engagement, but conceded that this may have been a function of class size. On the other hand, they found that the room overall facilitated sightlines to and interaction with students, with the caveat of not being able to hear students well. Instructors would like to improve the lighting control and quality in PE250. They also relied heavily on technology, and described problems in instances when it was not working. Lighting control was described as suboptimal.

8.2 PE275

Opinions about PE275 were divided. Instructors either loved or hated the room. Lighting control and room layout were two points of consensus when citing negative aspects of the room. Further, it was cumbersome and bordering on impossible to use the whiteboard and the projection screen simultaneously. Instructors found the room too long and narrow and had trouble with sightlines to the back rows. The location of the only entrance was a further point of complaint.

8.3 General

A downside considered by all instructors in both large lecture theatres was that students could not hear each other well. Instructors were unhappy with the information technology present in the room, and one instructor specifically brought her own laptop in order to get around issues with the desktop computer software. Except for one instructor, respectively, no one made use of the document camera or the SMART Podium™. Opinions were divided regarding the aesthetics of the rooms, and while some instructors seemed heavily impacted by them, others were not at all affected. Higher ceilings were generally preferred. Instructors thought that sightlines here were superior to those in the larger University Hall rooms. Circulation and furniture were items of dispute among instructors in both rooms. All generally liked the tiering in the rooms. Lastly, all instructors thought it was difficult to engage students in the large lecture theatres and expressed a wish to engage and interact with them more. Most instructors agreed that many of the negative features they experienced in the rooms might be primarily due to having to teach a large class.

9. Recommendations

Based on these data from five faculty members, a few recommendations for future large lecture spaces can be made. These pertain to (a) layout of the room, (b) ceiling height, (c) and overall class size.

9.1 Room Layout

Tiering was one aspect that seemed to work well in both rooms. The semicircular nature of PE250 was especially liked, because students had the ability to see each other. An important aspect to keep in mind when designing rooms is the ability for instructors to circulate easily between rows to hand out or collect assignments or exams. Further, the instructor station should not be too close to the student desks, so that the instructor can stand in front of the workstation. Instructors would have liked to split students up into smaller groups, which the rooms did not facilitate. Lastly, thought should be given to the number, placement, and noise level of the entrance doors for such large theatres.

9.2 Ceiling Height

The ceiling height in PE250 was described as exemplary. Instructors also liked that it allowed for excellent visibility to the projection screen. High ceilings should be included in the design plan for large lecture theatres.

9.3 Class Size

With one exception, instructors generally did not like having to teach a large class. This might be an important factor in considering future plans for large lecture theatres and utilization rates.

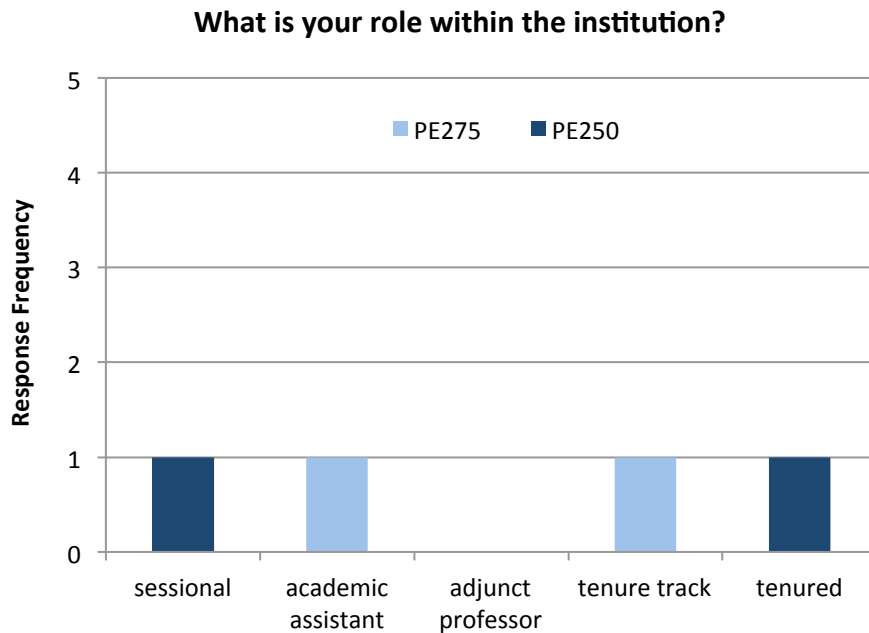
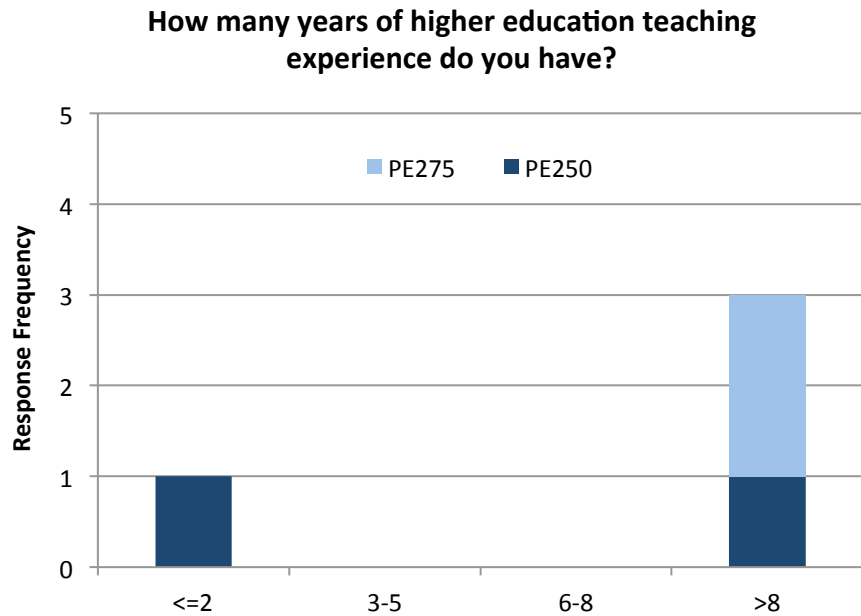
10. References

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77-101.

11. Appendix: Survey Data

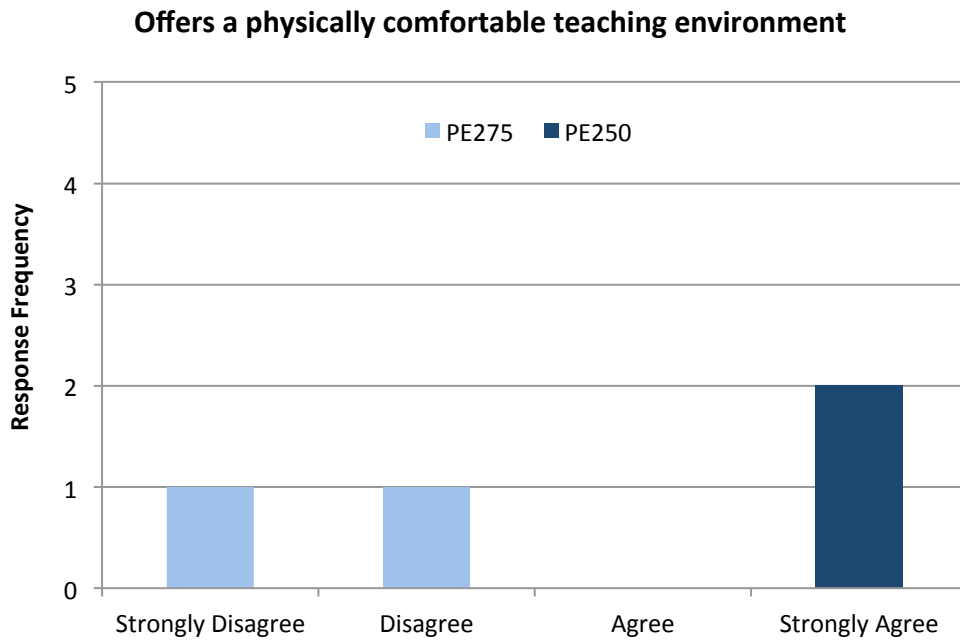
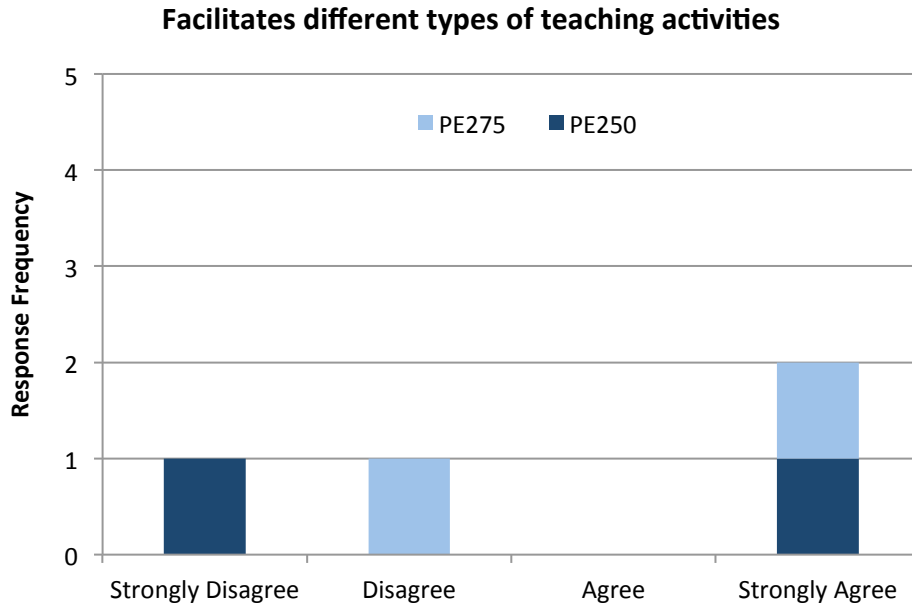
This appendix contains the faculty survey data of items rated on agreement, satisfaction, and ease of use, as well as demographic information. Previously displayed results are not displayed here.

11.1 Demographics

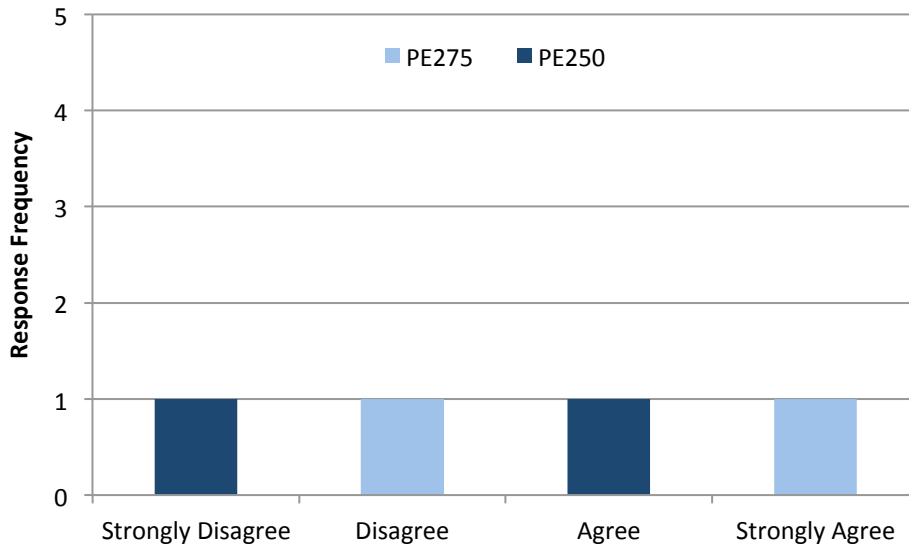


11.2 Teaching Environment

Instructors were asked four questions regarding the teaching environment that the room provided. They rated their level of agreement with each statement about the room on a scale of 1 (*strongly disagree*) to 4 (*strongly agree*).



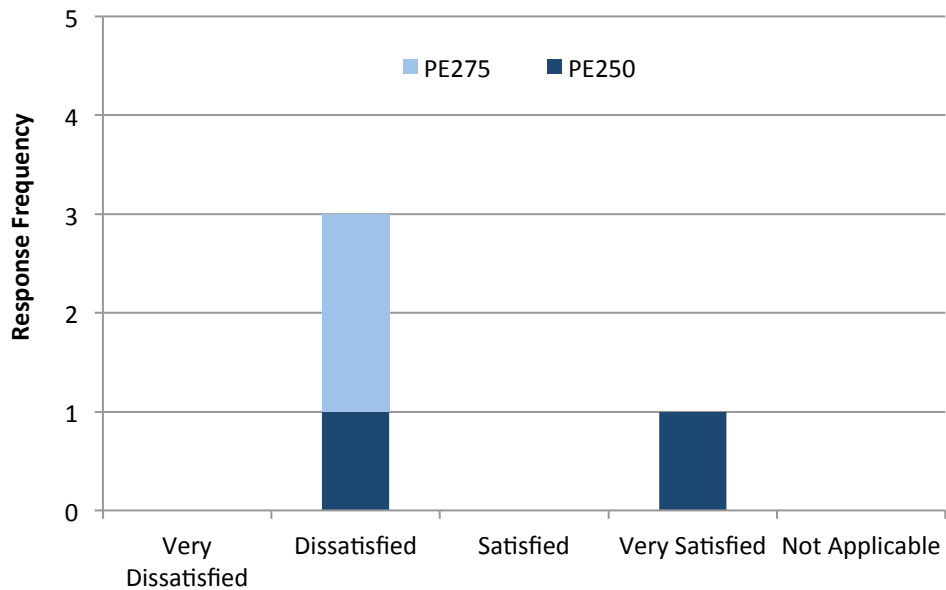
Facilitates student engagement



11.3 Physical Aspects

In the following, instructors were asked to rate their level of satisfaction with ten physical aspects of the room. Ratings of each item were scored on a scale of 1 (*very dissatisfied*) to 4 (*very satisfied*). The option *not applicable* was also offered.

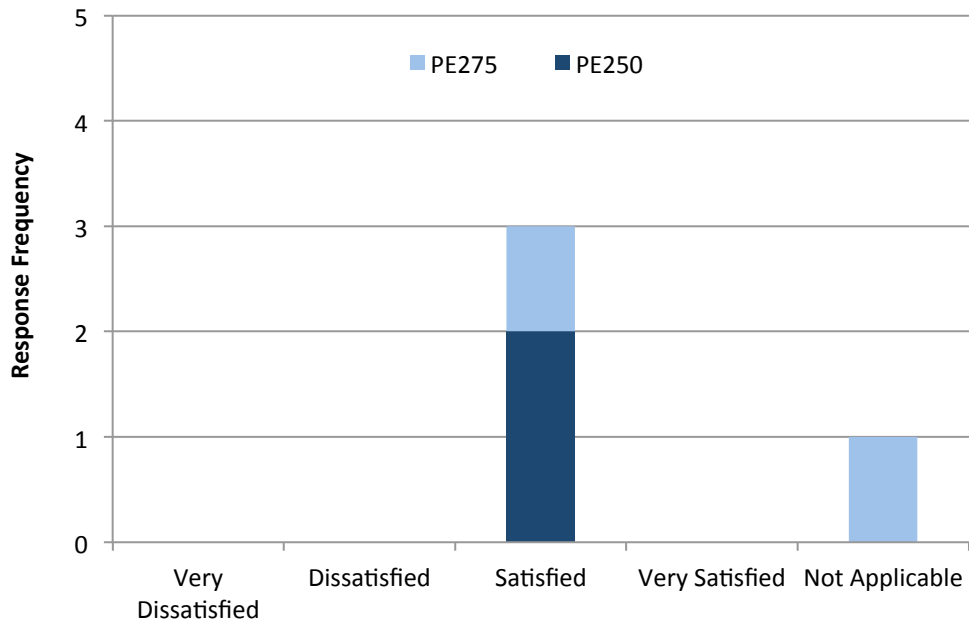
Lighting control



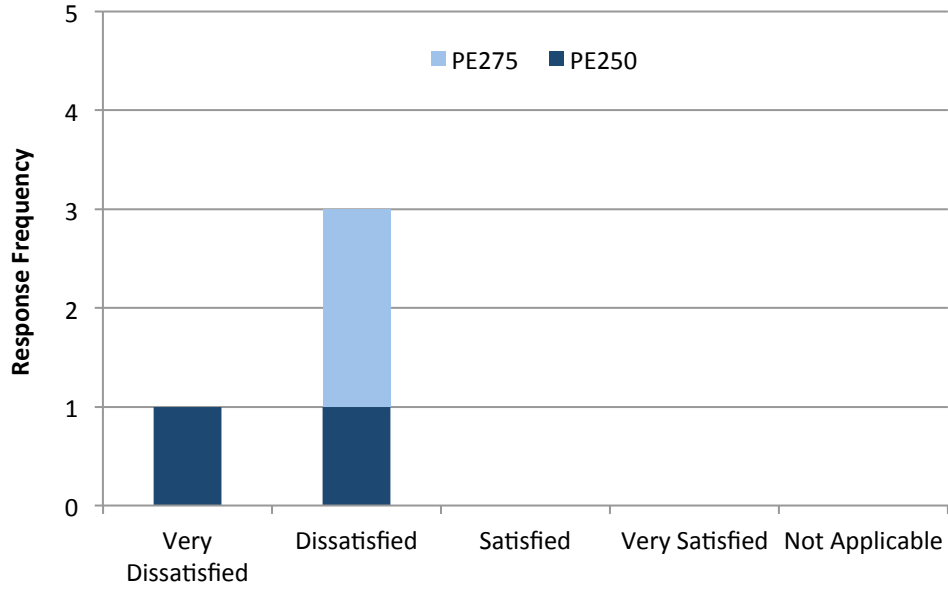
Lighting quality



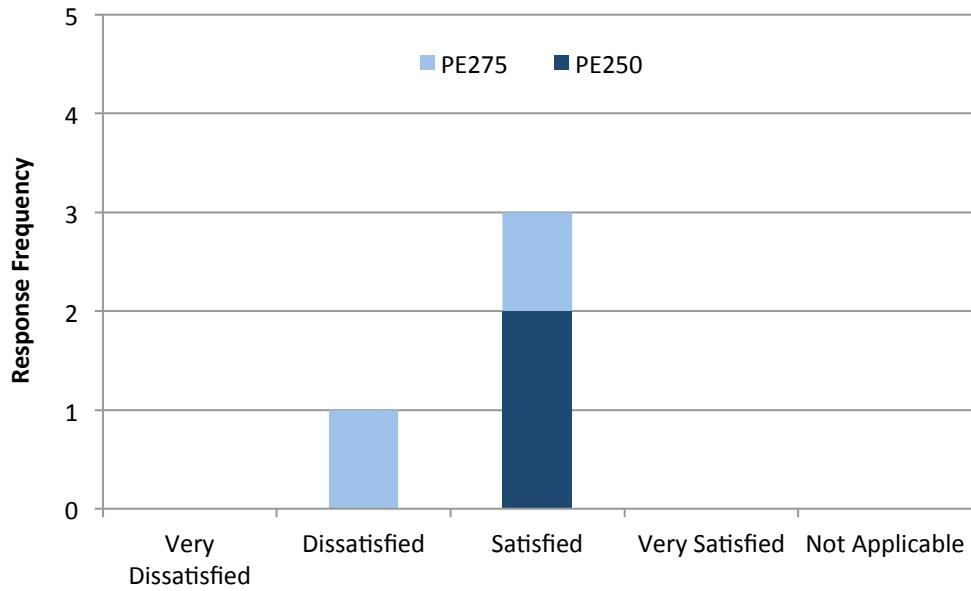
Sound quality I: ability for students to hear me and the content of my lesson



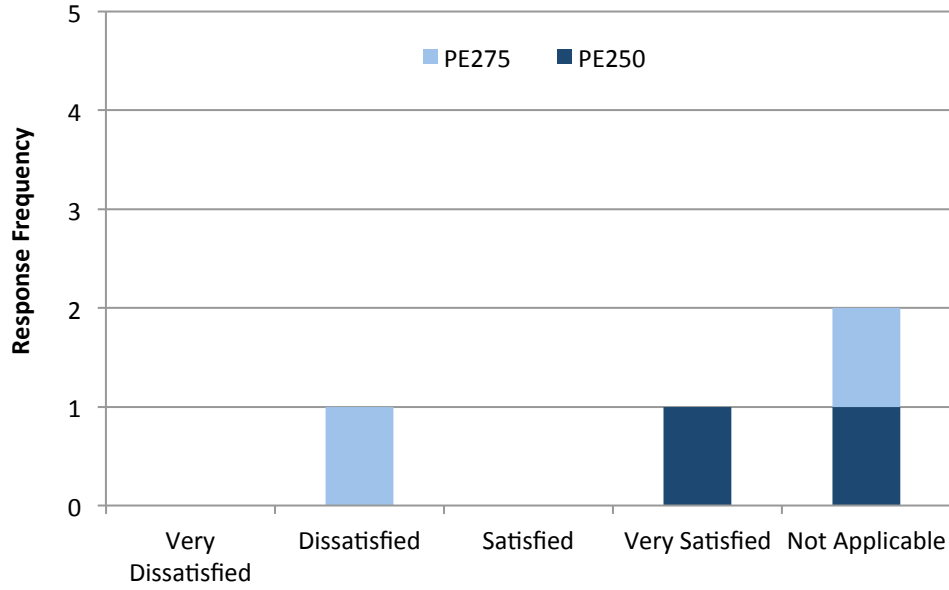
Sound quality II: my ability to hear students and for students to hear each other



Noise level



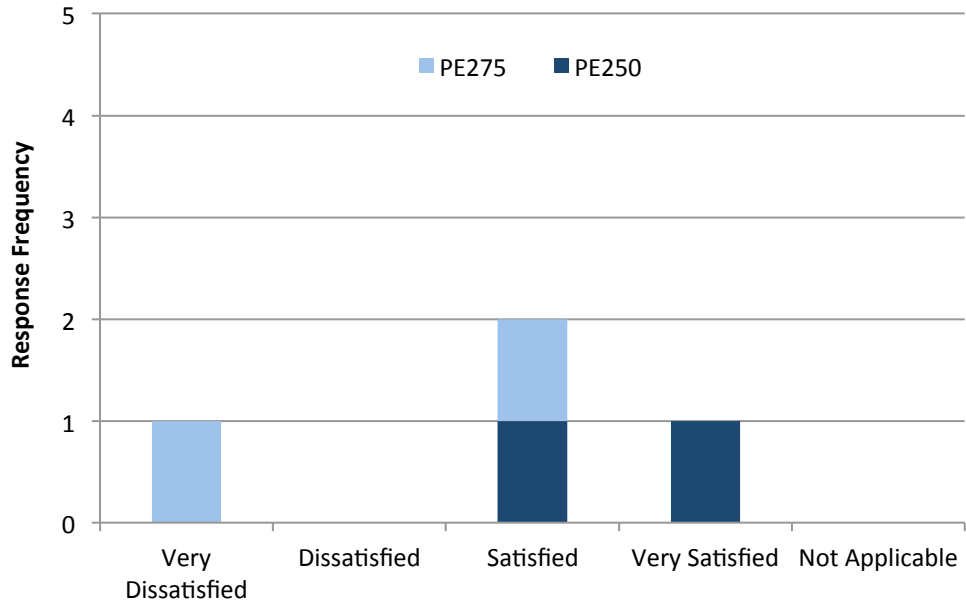
Temperature control



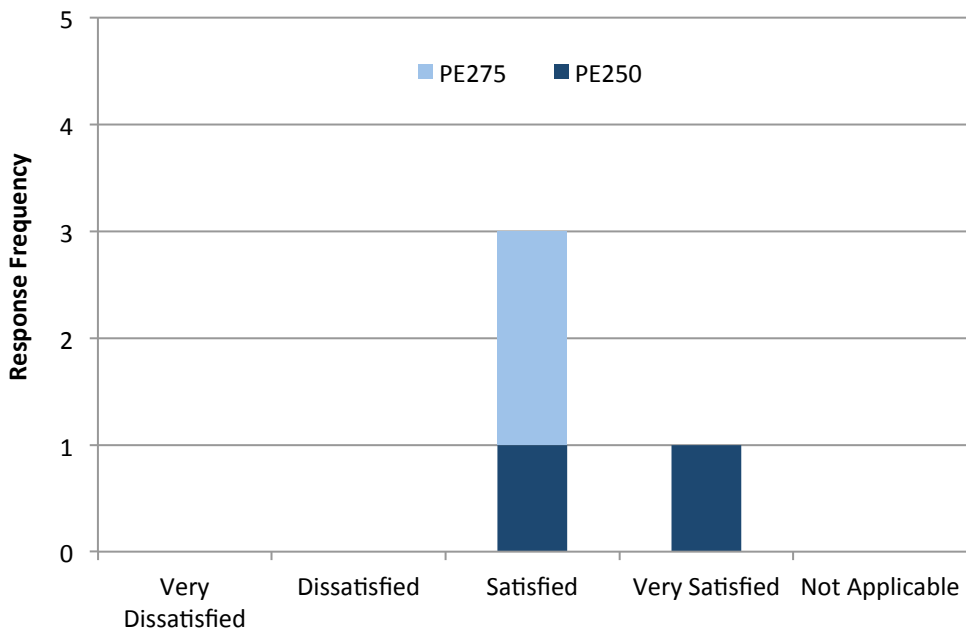
Air quality

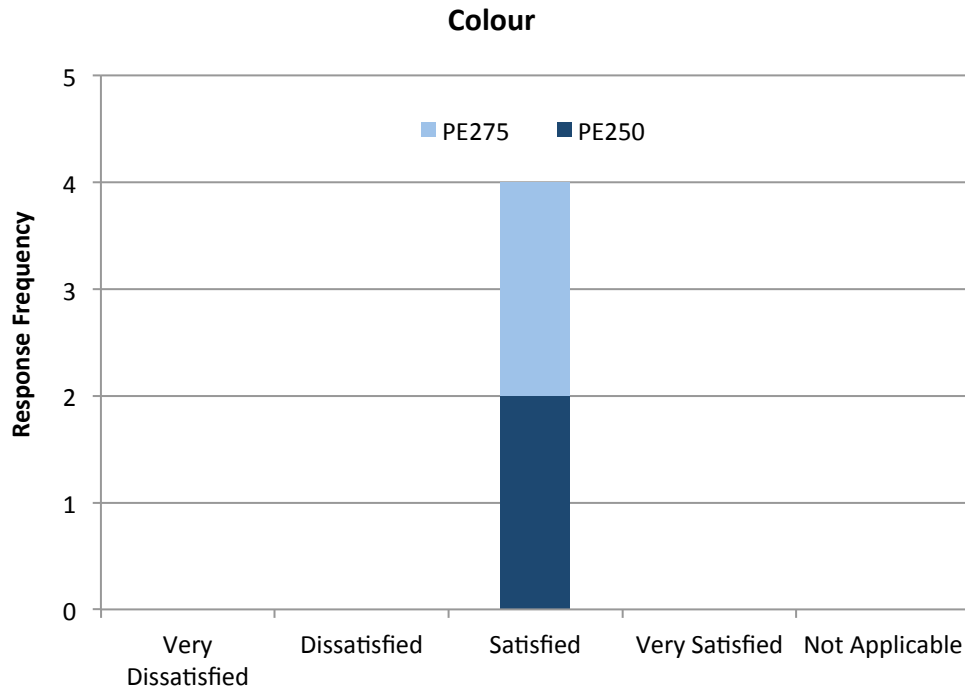


Room layout



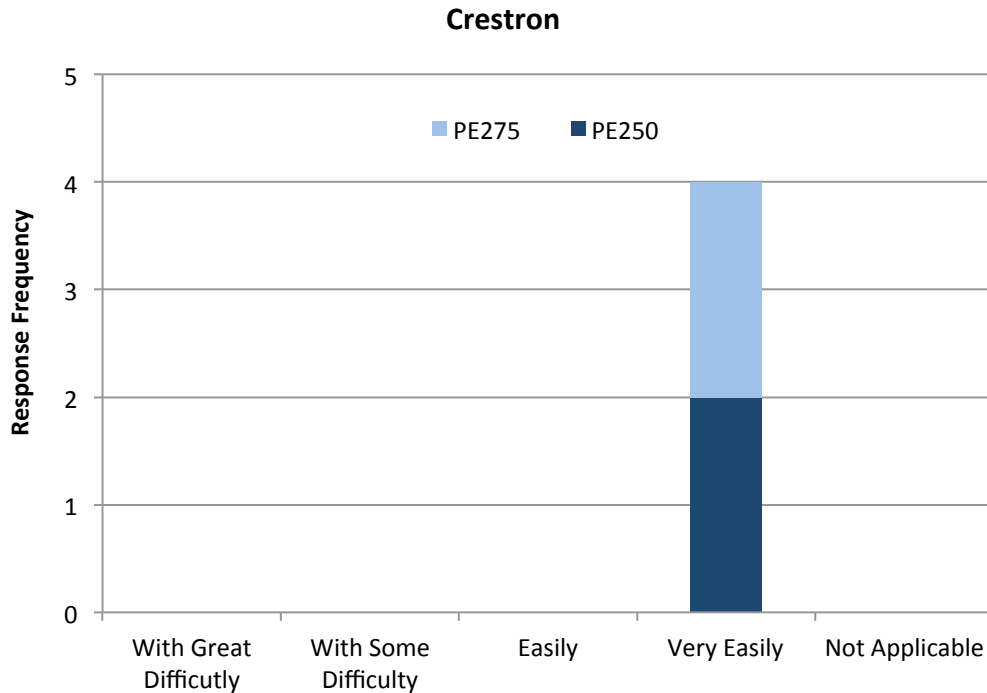
Furniture



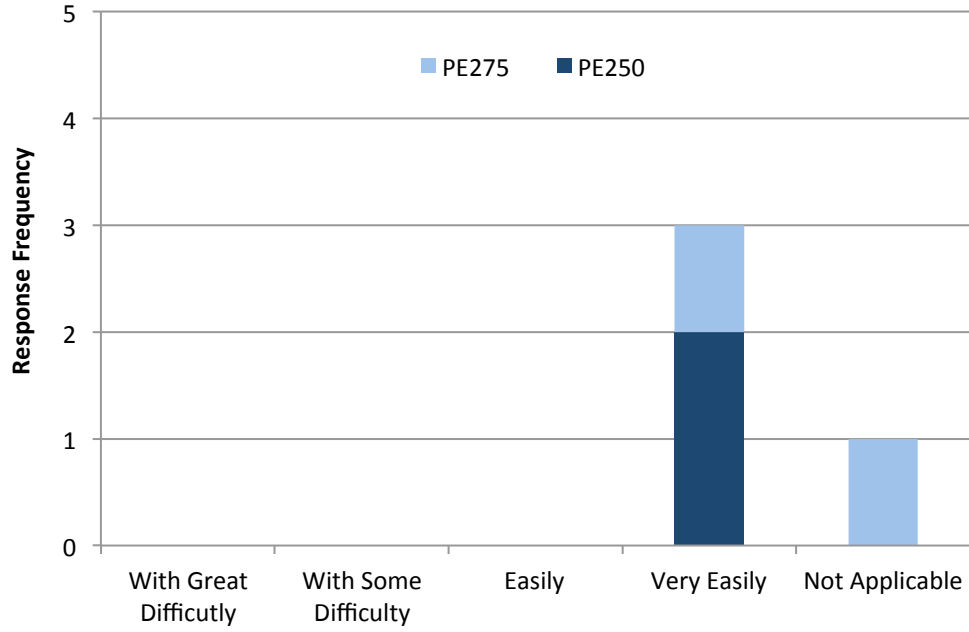


11.4 Technology

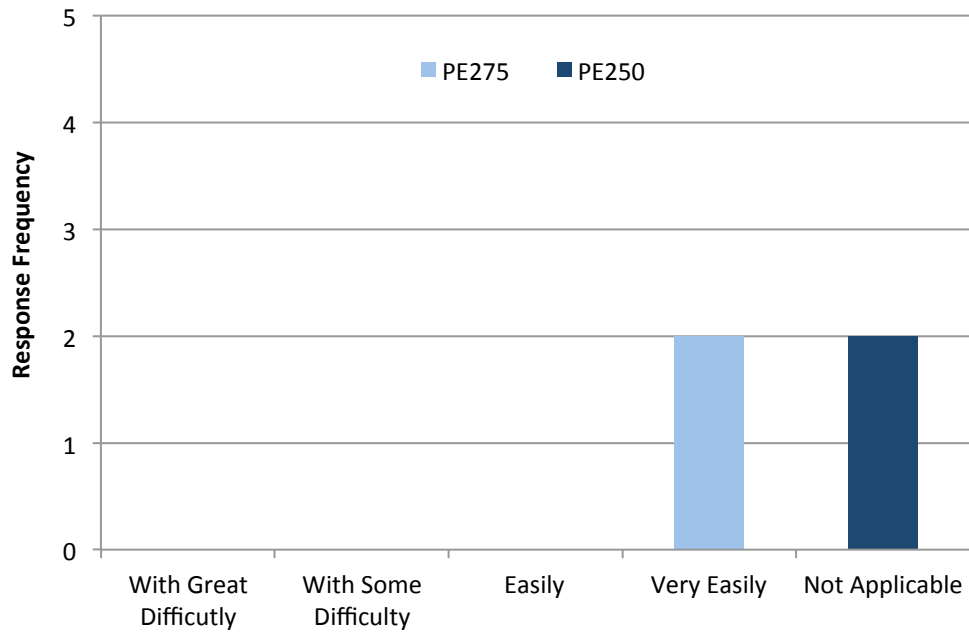
Lastly, instructors were asked to rate their ease of use with seven technology features of the room. Ratings were done on a scale of 1 (*with great difficulty*) to 4 (*very easily*). The option *not applicable* was also offered.

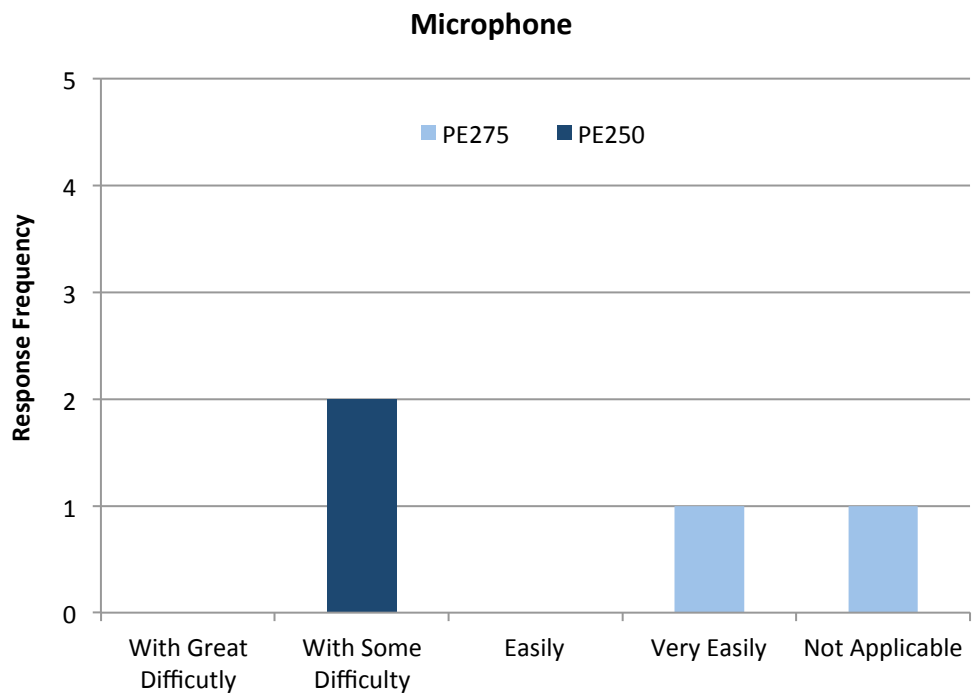
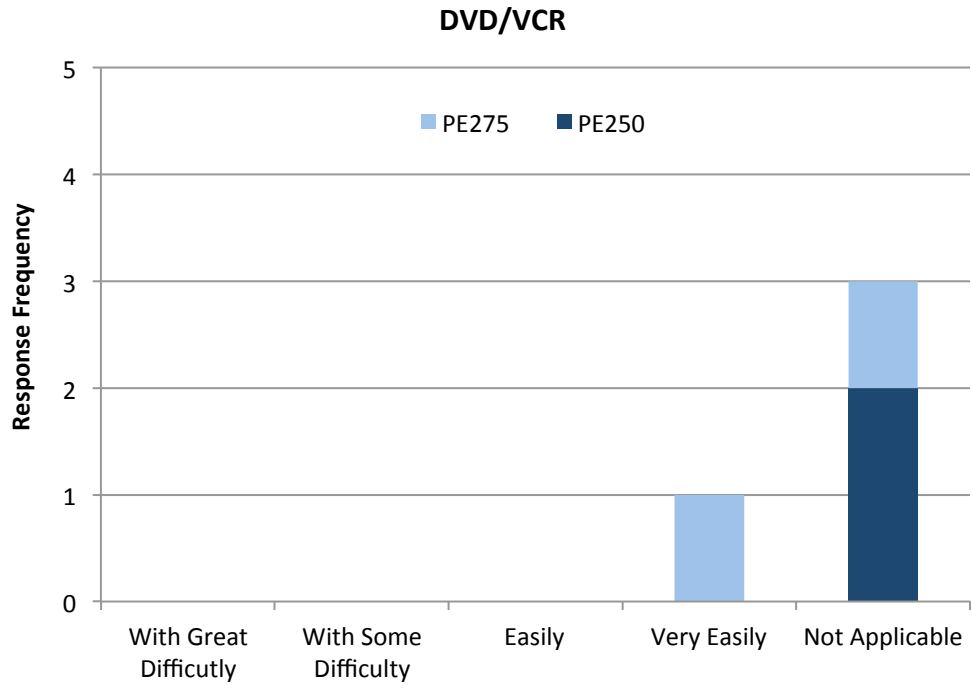


Desktop computer/projector

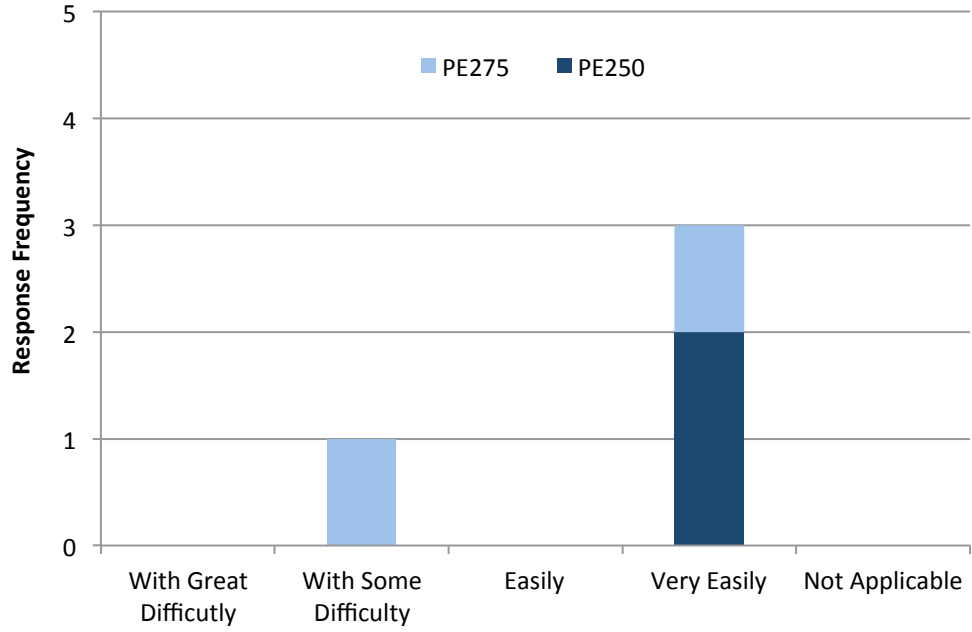


Laptop computer/projector





Speakers



Document camera

