

Instructor Experience Affects Perception of Student Technology use as a Sign of Engagement

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Abstract

Devices such as cell phones, tablets, and laptops have become commonplace in the classroom. Students can use these devices to disengage and distract others or to take notes and collaborate with others. Recognizing the difference is now a critical skill for university instructors. Assessing student engagement and responding to disengaged students are learned skills that develop with experience. This case study, conducted at a large public university, supports the idea that an older, more experienced instructor is better able to assess engagement in the classroom than a younger, less experienced instructor. Interestingly, the experienced instructor used student technology use, as a behavioral cue of engagement while the inexperienced instructor did not. The younger instructor was unsure whether student technology use was a sign of engagement or disengagement. However, the experienced instructor used cell phone use and the noise of student typing as signs of positive engagement. Initiating discussions between experienced and inexperienced instructors on the cues they use to measure in-class engagement could increase the rate at which instructors develop this critical skill.

Keywords: Student engagement, Professional development, technology use, case study

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Introduction

Educational policy and practices have been on the forefront of political debate as we seek to educate the next generation. Conversations regarding how to best teach students and what makes a teacher effective have been developing for decades (Boettcher, 2007; Braskamp, Brandenburg, & Ory, 1984). Persistence, however, is a factor most agree is highly correlated to effectiveness (Rovai, 2002). Science technology engineering and mathematics (STEM) and STEM education has become a fixture in American media and politics recently. Our science classrooms are critically important to the future of the country (President's Council of Advisors on Science and Technology, 2012). Jobs related to the STEM workforce fuel the economy and are instrumental in creating jobs in other sectors of the workforce. Colleges and Universities in the United States need to produce over one million more STEM graduates over the next decade to maintain a healthy economy. Essentially, colleges and universities need to become more effective over the next decade.

A sense of belonging or engagement are factors strongly associated with persistence in academics (Tucker, 1999). It is easy to see this from the student perspective, and it is most realistic to measure the students' perception of their learning environment (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008). Methods have already been established to measure students' sense of belonging and engagement (Rovai, 2002). In this regard engagement refers to the time and energy students invest in academically purposeful activities. Academically purposeful activities include participating in study groups, taking notes, joining social groups, or developing relationships and rapport with instructors. When students are actively involved in their learning, and participate in experiences that increase their sense of belonging they are more likely to persist in college. Because these activities are correlated with persistence and graduating, there is a need for instructors whom can encourage these experiences. Not only should instructors encourage engagement, they should also know what engagement looks like and know how to leverage their resources to influence student engagement wherever they can. The problem, however, is instructors are not always trained consistently or not trained at all to assess engagement.

University professors and instructors begin as novice teacher while in graduate school as graduate teaching assistants (GTAs). These early days of an instructor's career are not always nestled in a nurturing environment. GTAs often don't have a definitive job description, and must excel in a variety of capacities (Dudley, 2009). GTAs are required to teach, perform novel research, as well as take classes. Which aspect of their graduate life is held with the most emphasis varies wildly (Muzaka, 2009; Park, 2002). Often, GTAs are encouraged to spend the most amount of time with their research, while staying up to date with their coursework. This inevitably leaves teaching responsibilities and professional development to be neglected. Developing college instructors does not have to work this way. In a nurturing environment and under the guidance of more experienced instructors GTAs can develop into excellent university instructors (Kendall et al., 2013; Kendall, Niemiller, Dittrich-Reed, & Schussler, 2014). But, because of the priority teaching holds at many institutions while instructors are in graduate school, many instructors are left to learn teaching skills on their own. But how do instructors learn how to assess their classroom skills? Does longevity in the field establish an instructor that is set in their ways, or are experienced instructors staying up to date with new practices and techniques? And

what can we take away from what current instructors are doing and use it to help train new instructors?

Methods and Procedures

The purpose of this case study was to investigate instructor perceptions of student engagement in a normal college biology lecture. We observed instructors while they taught and followed up with interviews about those observations to learn what instructors notice while they are teaching, and how they react to students' displayed level of engagement. For this case study, we found a small sample of male and female instructors whose experience in the classroom ranged from less than five years to over twenty-five years. After contacting instructors and consent was granted one researcher would observe a normal lecture class given by the instructor. The researcher would try to stay incognito to not distract the students or the instructor. Observations focused on student behaviors pertaining to or indicating engagement in the lecture and instructor responses. The observer took field notes on the classroom environment including student actions and instructor reactions as well as lecture hall architecture. Following observations interviews were conducted. Interviews lasted approximately twenty minutes and questions were focused on what was observed but were also very flexible. Instructor perceptions of engagement and explanations to things that were observed were also studied. Data from the study came from both observation field notes and transcripts from interviews.

Analysis

Throughout the methodology we observed a cycle that was reinforced to varying degrees by each of our instructor participants (figure 1). Instructors were observed teaching or introducing a concept during the lecture. After teaching for some time or following the introduction to a concept the instructors needed to assess the engagement in the lecture hall. The assessment either led to the instructor seeing students display what was described as engagement behavior or students displaying behaviors consistent with not being engaged with the lecture. The room was usually a mixture of the two types of student behavior. After assessing for student engagement, the instructor then responded accordingly. If the instructor perceived a widespread lack of engagement, the instructor would try various techniques to re-engage students with the lecture. This cycle would continue throughout the lecture. Each instructor used their own creative ways to navigate this cycle of engagement. However, one theme emerged among all the instructors, the use of technology. Furthermore, in regards to technology, many comparisons worth investigating were discovered. In addition to technology use, instructors also indicated student location in the lecture hall was important to assessing and managing engagement during lectures. The analysis walks through the cycle instructors displayed. At each stage comparisons are made between veteran instructors and the younger instructor. All numbers coincide with the numbers in figure 1.

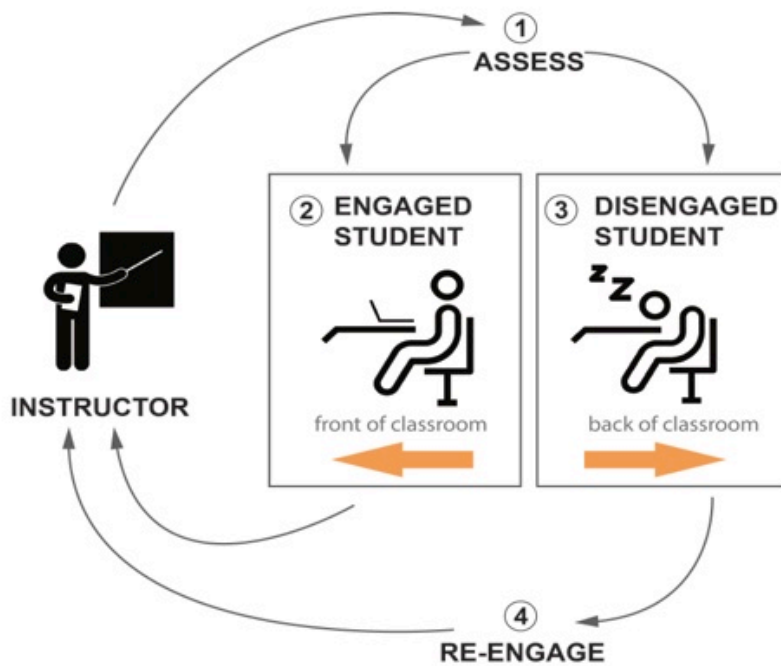


Figure 1. The instructional cycle observed in lecture classes

1 The instructors each had a personalized style of instruction as one might expect in any college course. Two of the instructors preferred and taught from PowerPoints with abbreviated notes for the students. Another instructor preferred lectures to be more interactive and instead used dialogue intermixed with discussion and drawings on the board. When assessing student engagement a few key points emerged. First, technology was a usable indicator of engagement; however there seemed to be a difference in instructor perception of technology use. Veteran instructor A has been teaching for over two decades and claimed “you constantly have to monitor” the level of engagement during a lecture. He claims he would “read faces”, and even said “he has certain barometers” he uses to assess the level of engagement in the class. One clear indicator for him was the sound of typing notes on laptops. He claimed that he could tell when students didn’t understand a concept based on the speed and irregularities in the rate of typing. Instructor A mentioned the sound of typing clued him in to engagement as well as the student level of understanding. He claimed if he’s “reviewing something [he] delivers it faster”; using the sound of typing he understood whether students recognized it as review and whether students are understanding that piece of information. Instructor B enforced a no laptop use policy in the back of the lecture hall because of the difficulty assessing engaging technology use. Instructor B has over fifteen years of teaching experience, and has learned from experience how to manage technology in the classroom as a way of managing classroom engagement. In addition to many of the same techniques to assess engagement as the other veteran instructor (Instructor A), Instructor B would also ask the class assessment questions when she saw individuals’ attention and engagement starting to fade. Instructor C, the novice instructor, had not yet learned to notice subtle clues students display that indicate their engagement. He did mention he observed students on their laptops, but made comments suggesting he did not know whether they were actively participating with the lecture or using their devices to distract themselves.

2 Instructors seemed to agree that engaged students generally sat toward the front and within clear eyesight of the instructor. Instructor A made comments suggesting that those in the front of the classroom were reliable to assess student engagement because they had a rapport of consistent engagement. During the interview Instructor A mentioned he viewed engagement as a function of “real estate” in the lecture hall. He continued by saying he enjoys the moments “when from the back portion of the class that starts working their way forward without you saying anything to them”. He used this as an indicator of the student engaging themselves with the class and lecture. Instructor B’s classroom policy that students in the back could not use laptops for note taking because students in the back generally use them for nonacademic purposes. Instructor C also acknowledged being able to assess those in the front of the lecture hall more readily.

3 Students located further toward the back of lecture halls were noticed to be less engaged. Either instructors directly observed them distracting themselves on their computers or other devices or could perceive based on their body language they were not engaged. This was consistent with the researcher’s classroom observations. For example, in instructor B’s classroom the students in the back did not attempt to take notes and some were even observed to be sleeping. Instructor C mentioned the back of the classroom in the lecture hall was too far and out of his sight line that it was difficult to see what any of the students were doing. He even mentioned it was hard to hear any noise or talking coming from the back of the lecture hall.

4 Redirecting the lecture varied based on instructor experiences. Instructor A commented he would overtly re-gain students’ attention by asking for student attention. During observations, Instructor A would make concept related jokes to perk students up and regain their attention. As mentioned previously, Instructor A relied on typing noise to help him pace his lectures. If students were out of sync with their note taking based on his expectations of how they should be taking notes he used it as a cue to adjust his teaching and re-engage students. Interesting to note, instructor B managed engagement by utilizing her own unique technology devices. Instructor B was observed to re-engage students using a “magic pen” stylus and tablet to model highlighting important content for students. Instructor C managed re-engagement similar to Instructor A, however instead of an overt method he would provide a summary of the concepts just covered in the lecture. Instructor C would also ask students questions relevant to the concepts just covered as a method to bring students back to the lecture.

These experiences and varying perceptions of student engagement represent what needs to be examined further. Instructors A, B and C were very consistent for items 2 and 3, however instructor C had a noticeable difference for items 1 and 4. Instructor C was aware of the possibilities of measuring and managing engagement using technology, but was not as skilled in these areas. By learning how current instructors assess engagement and more importantly how they manage it we can help future faculty members (GTAs) with strategies to increase their classroom engagement. Further studies should examine more perspectives of instructors with various backgrounds. In addition, the perspective of the student should not be ignored; how students perceive their own engagement should also be examined.

Discussion and conclusions

This case study revealed interesting perspectives on instructors' perception of student engagement. Each instructor was observed to approach teaching differently, and each instructor managed engagement in their own way. Technology was an important theme that emerged with each instructor. Instructor A, the most veteran instructor in this study, used subtle nuances derived from technology use to assess student engagement. It was interesting to see how adept Instructor A was at assessing student engagement using technology being he was the oldest instructor. The technology and resources available today were not available when he was learning to teach. Instructor B was an expert at leveraging technology as a method for capturing and maintaining student engagement. Her methods were driven by her experiences, and they led her to expertly managing engagement. Instructor C is a novice instructor. It is clear he is passionate about students and their learning needs, however he had the least amount of experience in the classroom. This led him to not having as many skills to assess student engagement as his veteran counterparts. What makes the technology use an interesting theme to emerge in this study is because the older more veteran instructors not only better at using it to assess engagement, but they were also more knowledgeable about how to use technology as a leverage to manage engagement. The younger instructor was tacitly aware of the potential to help assess engagement technology could hold, but had not yet developed those skills yet.

Student location in the lecture hall was also an impactful theme for all instructors. Each instructor was aware of the benefits and risks related to engagement associated with where students sat in lecture halls. The most veteran instructor was also aware of how to leverage certain cohorts of students based on their location for purposes related to managing engagement. He observed areas of the classroom where the most engaged students sit, and he would routinely use their displayed level of engagement to assess the engagement throughout the whole class. The other veteran instructor used her classroom policy to manage engagement in areas of the classroom not readily accessible to assess. The novice instructor was aware of how to assess the students within eyesight and knew of the challenges related to assessing engagement of students in the back of the lecture hall.

The instructors with more experience were aware of various methods to assess and manage engagement. The novice instructor was aware of most opportunities however; he had not developed the skills or had not learned techniques to leverage these opportunities. These findings present an opportunity for professional development. We are beginning to learn instructor perceptions of the classroom, and how they developed those perceptions. The more experienced instructors were more skilled with assessing the classroom in many ways including by leveraging technology. It was surprising to learn the instructor was not as skilled in this area. Common perception would lead many people to believe a younger instructor would be on the cutting edge of technology use, however this was not the case. The most valuable information gained in this case study were the perspectives on developing instructional skills of the more experienced instructors. The experienced instructors were aware of their own maturation as instructors, and could bring those perspectives and lessons to younger instructors. Having experienced instructors help novice instructors develop skills necessary for engagement would have an impact on instructor development and the development of more effective instructors. Limitations

from this case study result from the information coming from one university in the Southeastern United States. Although each instructor was trained in other locations around the U.S. investigating perspectives of instructors from many other institutions would be beneficial. Future directions for this research will include many more college and university instructors with varying degrees of teaching responsibilities and experience.

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