



Teacher Perception of Technology in the Classroom: A Qualitative and Quantitative Analysis

Alex Bowers Shoen, Spring 2017

Shoen starts at the transition from chalk boards to white boards, and how a teacher who used wax lines on chalk boards to teach handwriting had to adapt to this change. She puts this transition in context using Smerdon's framework of teaching barriers (borrowed directly from Shoen here):

- Lack of organizational and technical support
- Lack of time (to learn the technology and to use the technology)
- Lack of resources
- Attitudes and perception on all levels (teachers, administration, district)

Shoen's first step was a qualitative study of 5 teacher interviews. The biggest trend she noted from these interviews stemmed from lack of control due to administrative rules or computer/network problems.

Then Shoen conducted a quantitative study with 22 Likert-scale questions. From these questions, she extracted two dimensions: a value dimension (does the technology provide value to students and/or the teacher) and a voice dimension (the teacher gets training on technology and has control). The value factor correlated negatively with grade level, and positively with the amount of hardware/software used and the number of ways technology is used in the classroom/planning. The voice factor correlated positively with the amount of software used and the number of ways the teacher used technology, and it correlated negatively with the number of problems the teacher had with the classroom technology.

I found these two factors to be an interesting framework with which to evaluate a classroom's use of technology. Further work could involve writing a survey with this framework in mind at the start to validate whether the teachers' responses are consistent with the original survey. Then, these results could also be correlated with student evaluation metrics to determine if higher technological engagement led to an increase in student performance. Shoen's own suggestions for further research include a closer look at creating a framework around how teachers find workarounds for technological failures.



Gamification and Motivation in Learning: A Meta Analysis

Sam Deja, Fall 2016

Deja's meta-analysis on the use of games in education shows that the research on the topic has mixed conclusions about the effectiveness of gamification. Deja carefully selected 5 studies to focus on due to their using a quantitative approach that included a metric for motivation.

The results of the studies that Deja examined was that some of the studies showed that the "game group" had higher learning rates than the "no game group" in only some of the trials. As for motivation, it was pretty much flat across all of the studies.

Deja goes on to say that perhaps a deeper analysis of the game features should be conducted, since each study used a very different game from the others. Also, Deja hints in the conclusion that there is potentially danger in externalizing rewards for students learning. Another project (Edward Anderson, Spring 2017) references Alfie Kohn's book "Punished by Rewards" which I am interested in reading to learn more about this pitfall of educational gaming.



Factors Contributing to Underrepresentation of Women in Computer Sciences

Katja Krivoruchko, Summer 2017

Krivoruchko points out that women are very underrepresented in engineering and computer science, and she hones in on the problem being a recent one by showing that the representation was more balanced until the 1980s when it dropped off significantly and has stagnated ever since.

The first obstacle Krivoruchko points out that women face in these fields is the stereotype threat, where the pressure of confirming a negative stereotype makes people perform worse. Next, Krivoruchko discusses how pioneering female engineers and computer scientists weren't celebrated until recently, leaving a gap in female role models.

I'm interested in digging deeper into the vast amount of work on this topic, and exploring how technology (whether through Computer Aided Instruction or Educational Games, as mentioned above) can address the whole student population instead of reinforcing the already unbalanced playing field.