Investigating the Impact of Clicker-Enhanced Pedagogy in a Secondary Physics Methods Course

Part 2/2

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Sunday, January 5, 2014
AAPT 2014 Orlando, Florida

Research-Based Objectives

Investigate the effect of Active Engagement (AE) on teacher-candidates' (TCs') epistemologies

Explore a possible mechanism for AE pedagogy

Model AE in the context of the course content

Integrating into the Classroom

Instructor modeling AE pedagogy

TCs experience developing questions

Research Project

Timeline

Secondary Physics Methods Course
(+ 2-week short practicum)

13 students
13 weeks
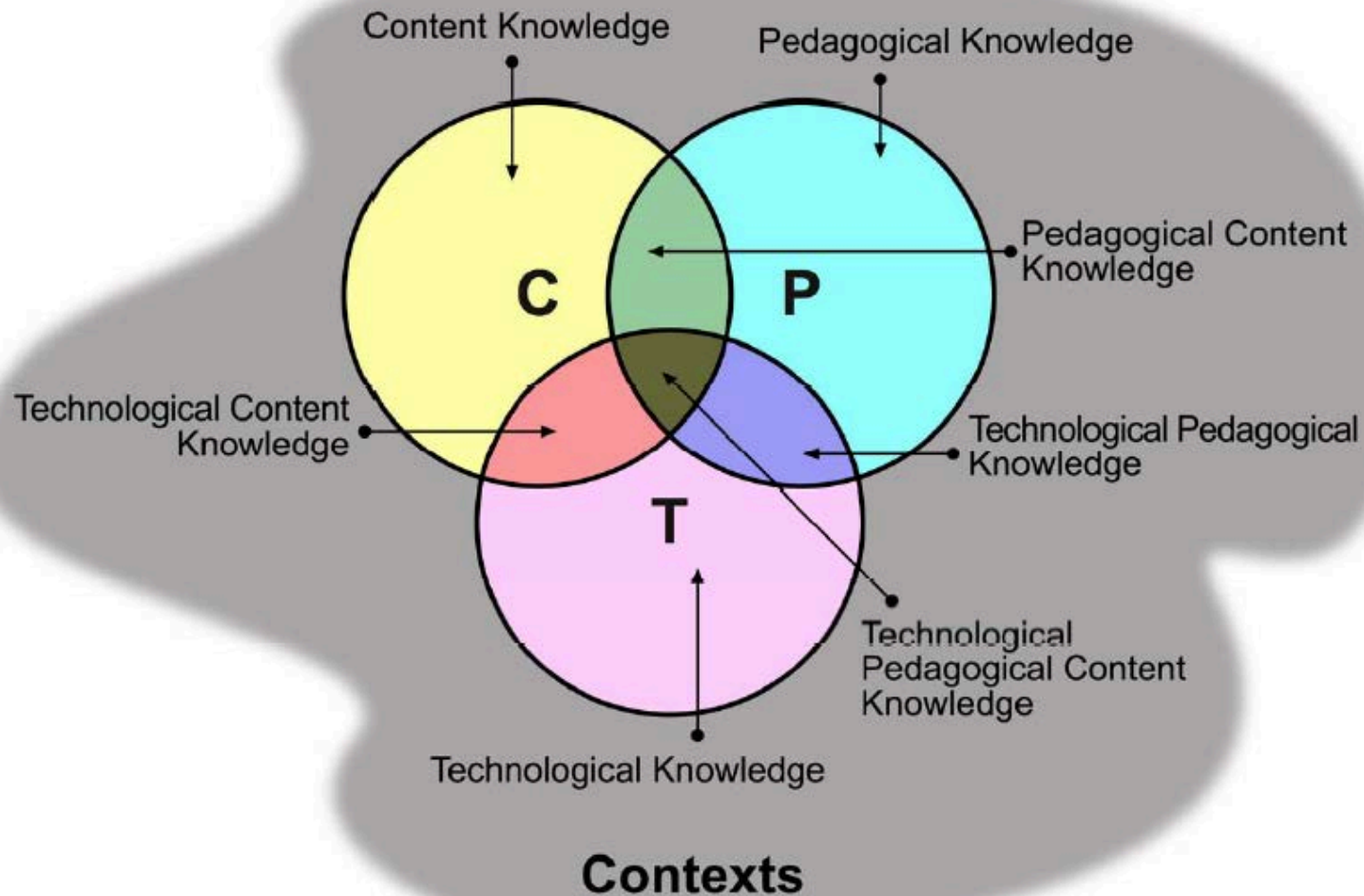
Extended Practicum

10 weeks
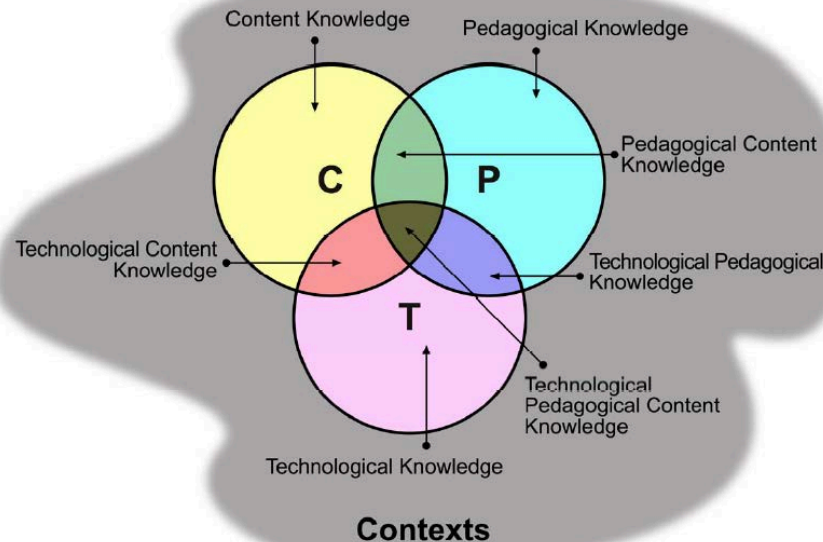
Enhanced Practicum

3 weeks

Pre-Practicum Interviews (8)

Post-Practicum Interviews (7)

Focus Group (1)

Direct Impact on our Teacher-Candidates

Koeler & Mishra, 2007

Direct Impact on our Teacher-Candidates

"It really opens the door for umm discussions between people. Um regarding a) you know, what is the right answer, and b) how would you explain that to uh either teacher-candidates or to your potential students."

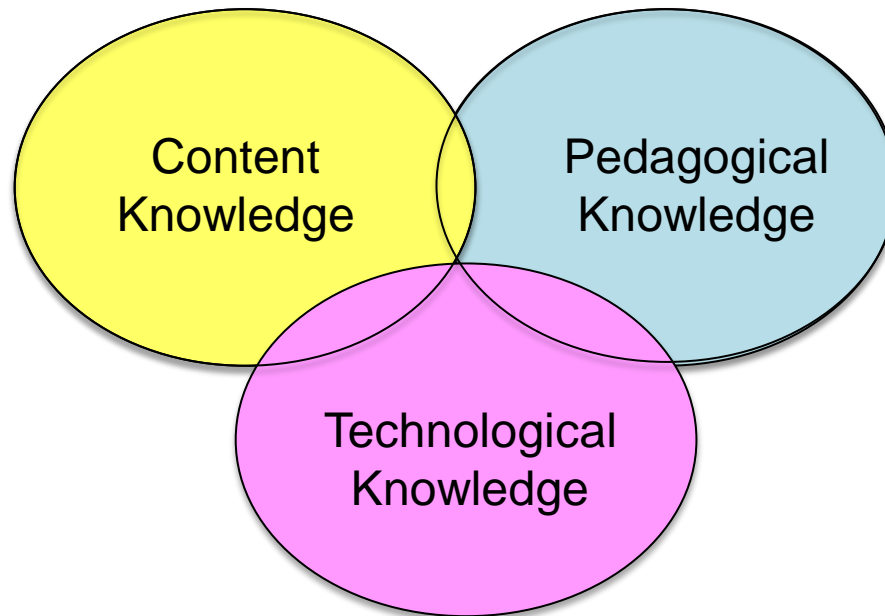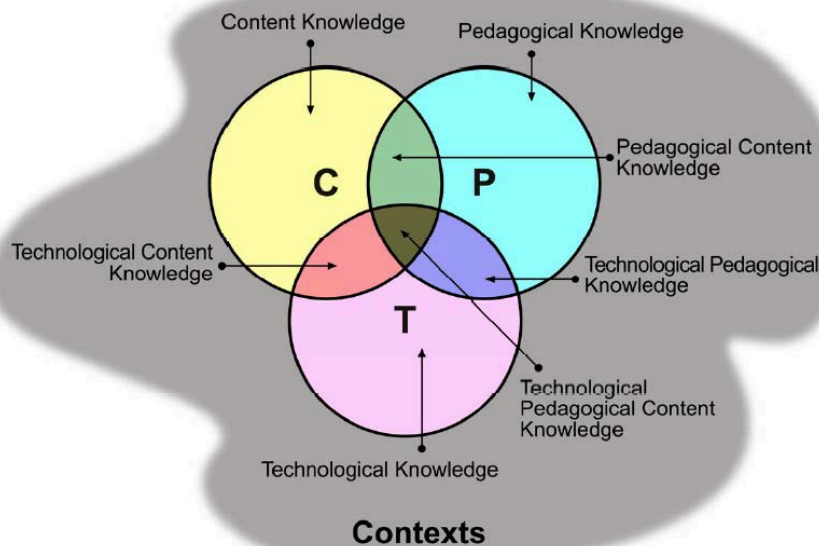Pre-Interview 2, Participant 9

Direct Impact on our Teacher-Candidates

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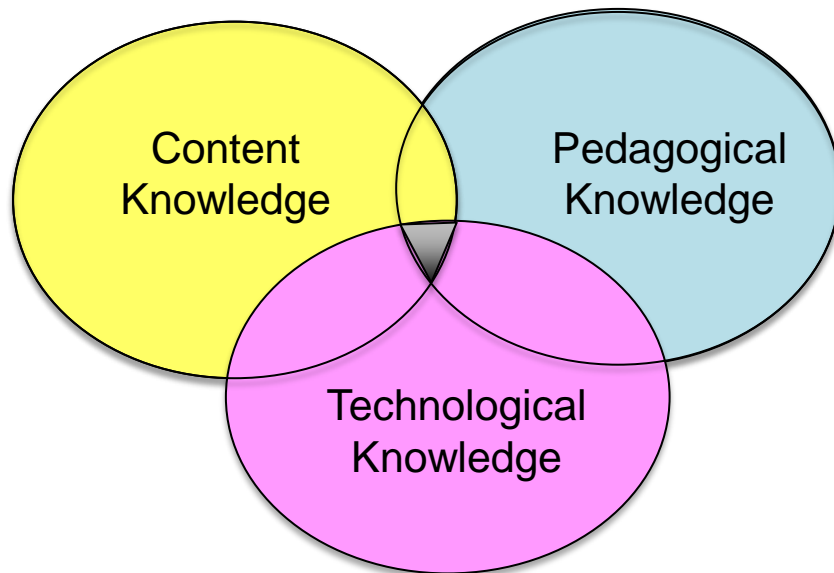
Pre-Interview 2, Participant 9

Direct Impact on our Teacher-Candidates

"So, if you set it up in a dynamic where… different types of people have [different needs], so if you need to talk to someone, you still get that, if you need silence, you get to think on it on your own, and then people aren't so stressed… And they actually get to argue and talk back and forth and they'll remember it more. So for them, I think they'll master it more."

Post-Interview 2, Participant 20

Direct Impact on our Teacher-Candidates

Content Knowledge

Pedagogical Knowledge

Technological Knowledge

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Post-Interview 2, Participant 20

Broad Impact for Teacher Education

Investigate the effect of Active Engagement (AE) on teacher-candidates' epistemologies

Model AE with the course content

Modeling impacts TCs epistemologies, regardless of successes/challenges in practicum

"I'm there as a teacher, (pause) but I'm also there as a student. Conversely, they're there as a student, but they're also there as a teacher. That doesn't mean they're teaching necessarily, teaching me. They're teaching each other... You're always a student-teacher, regardless of whether or not, what your position says. The-the moment you step out, and you meet someone, you now are both a teacher and a learner."

Post-Interview 1, Participant 15

Broad Impact for Teacher Education

Explore a possible mechanism for AE pedagogy

Clicker-enhanced pedagogy works as a mechanism for AE pedagogy in a small class

"Coming into the program, we were all sort of <u>thought</u> that we were expected to be masters, and if the instructor puts up a clicker question, you think 'Jeez, I don't actually know the answer' – immediately you think well, we're all supposed to be masters, I'm probably the only one who doesn't know. But uh when the responses come in, you see other people think like you, it's definitely reassuring."

Pre-Interview 2, Participant 9

Resources

- Beatty, I., Gerace, W., Leonard, W., & Defresne, R. (2006). Designing Effective Questions for Classroom Response System Teaching. *American Journal of Physics, 74*(1), 31–39.

- CWSEI Clicker Resource Guide: An Instructors Guide to the Effective Use of Personal Response Systems (Clickers) in Teaching. (2009, June 1).

- Lasry, Nathaniel. (2008). Clickers or Flashcards: Is There Really a Difference? *The Physics Teacher, 46*(May), 242-244.

- Milner-Bolotin, Marina. (2004). Tips for Using a Peer Response System in the Large Introductory Physics Classroom. *The Physics Teacher, 42*(8), 47-48.

- Mishra, P., & Koehler, M. J. (2007). Technological pedagogical content knowledge (TPCK): Confronting the wicked problems of teaching with technology. In *Society for Information Technology & Teacher Education International Conference* (Vol. 2007, pp. 2214–2226). Retrieved from http://www.editlib.org/p/24919/