Evidence of Research Competencies

Perspective on Research

Throughout my educational career, I have been exploring student-centered pedagogies and technology to motivate and engage students, which has brought me to the exploration of mobile devices within these environments.

In order to attain my goal as a tenure-track faculty member at a teaching-intensive university in order to prepare pre-service teachers to utilize technology within the context of student-centered learning, it is important that I have a clear understanding and ability to research these topics.

I seek to examine and find ways to support student-centered learning. Hannafin (2012) defined student-centered learning as an instructional method where the student determines the goal, means, or both, of learning. Student-centered learning includes numerous pedagogical strategies such as project-based learning (Kilpatrick, 1918; Adderley et al. 1975), problem-based learning (Barrows & Tamblyn, 1980), and service-learning (Jacoby, 1993). Although these three pedagogical approaches have slightly different tenets, they all have a similar focus on student-centered qualities: communication, collaboration, and student inquiry

In general, research has shown student-centered learning experiences tend to be more effective because they lead more authentic, engaging, and collaborative learning experiences which lead to increased retention of content studied (Burrows, 2003, Cornelius-White, 2007; Strobel & van Barneveld, 2009). Furthermore, some have suggested that student-centered learning can be more influential when technology is used to support it (Brush & Saye, 2000; Kozma, 2006; Stahl et. al, 2006; Brush & Saye, 2009; Cornelius-White et al., 2012). In particular, scholars advocate that the use of mobile technologies, such as iPads, can be used to provide substantial support during student-centered learning due to the technology's ability to focus student experiences to be more interactive, learner centered, authentic, collaborative, and on-demand (Chan et al., 2006; Fisher and Baird, 2007; Alyahya & Gall, 2012; Churchill et al. 2012). For example, Looi et al (2011) used mobile devices in their elementary science class and found that students showed improvement in their conceptual understanding of the content compared to peers without a device, collaborated more, and were willing and able to discuss and explain the content at a higher level.

Mobile technology can include "…any device that is small, autonomous, and unobtrusive enough to accompany us in every moment of our every-day life, and that can be used for some form of learning" (Trifonova & Ronchetti, 2003, p. 2). Because of the affordances of mobile technologies, public schools across the United States have invested into mobile technology on a 1:1 basis, where each student has

access to their own mobile device (Looi et al., 2010; Richardson et al., 2013). Therefore, my scholarship focuses on the use of mobile technology, specifically identifying ways to use mobile technology to support student-centered learning. In my first study, I lead a team of researchers in exploring the implementation of a 1 student : 1 iPad initiative at the kindergarten level. During this research, it was evident that by allowing each student access to their own iPad, the students were able to explore content at their own pace and level, and to produce artifacts that adequately demonstrated their understanding of the content through a variety of means.

Simply stated, due to the affordances of mobile technology, such as the ability to communicate, collaborate, and organize information, these devices allow for an efficient method of supporting student-centered learning environments.

Research Competencies

Based on my career and professional goals, I believe that I will require the following research competencies:

- Possess a strong research base on IST topics, trends, and history, particularly relating to student-centered learning and mobile technology
- Review and critique existing literature related to student-centered learning and mobile technology in these types of learning environments
- Ability to synthesize literature to identify gaps
- Demonstrate knowledge of qualitative, quantitative, and mixed research methods and analysis
- Demonstrate the ability to lead, coordinate, and participate in research projects
- Identify and collect funding for research
- Participate in the research community by sharing research through conferences and publications

Progress towards Competency

- Knowledge in IST areas and History

- o Status: Complete
- o As part of my coursework at SUNY Potsdam, I completed IT625: History and Philosophy of Technology Utilization, which covered the history of the field of Educational Technology from the Industrial Age of Education until the modern day, as well as GRED 600: Philosophical Foundations of Education and GRED 677: Development and Learning for Teachers, where we focused on Brain-based education. My coursework at Indiana University further supplements this through R711: Readings in Instructional Systems Technology, P540: Educational Psychology, and participation in the PBL-Tech research group.

- Ability to review and critique existing literature
  - o Status: Complete
  - o During my coursework at both SUNY Potsdam and Indiana University, I have had numerous opportunities to review and critique research articles. This can be seen through my projects for game engagement research for IT635, empirical study critique for R690, exams 1, 2, and 3 for Y521 where we analyzed and critiqued research articles, literature review for R711.

- Ability to synthesize literature to identify gaps
  - o Status: Complete
  - o My Coursework at SUNY Potsdam and Indiana University have allowed me to synthesize literature and identify research gaps in numerous courses, providing me opportunities to perform my own research. Examples of this can be found in my game engagement research for IT635, literature review for R711, and within the PBL-TECH research group, in exploring what a 1:1 iPad initiative in kindergarten classrooms looks like.

- Knowledge of qualitative, quantitative, and mixed research methods and analysis
  - o Status: In Progress
  - o To build up my understanding of both qualitative and quantiative research methods and analysis, I have taken several courses which include components about these methods. These courses include IT635 at SUNY Potsdam: Research and Theory of Communication and Performance Technology, and at Indiana University, R690: Application of Research Methods to Instructional Systems Technology, and Y521: Methodological Approaches to Educational Inquiry, Y502: Intermediate Inferential Statistics, and INFO651: The Ethnography of Information through the IU School of Informatics. During Spring 2014, I plan to complete Y611: Qualitative Inquiry in Education, and X.

- Lead, coordinate, and participate in research projects
  - Status: In Progress
  - As part of R695 at Indiana University, I participate in the PBL-Tech research group in the design and development of scaffolding tools to support inquiry based methodologies (currently, the PIH-net scaffolding tools for social studies education). I am also leading a team of researchers in a study on the 1:1 iPad initiative at the Center Grove Community School Corporation in Greenwood, Indiana.

- Ability to identify and collect funding for research
  - Status: In Progress
  - As part of R695, PBL-Tech research group, and as the Computer Educator Licensure program, I have participated in the CS 10K grant application, in order to adapt our current CEL courses to a more Problem-based curriculum focusing on Computational Thinking, which was not awarded in 2013, but which is currently being drafted for re-application in 2014. As a lead researcher, I have also applied for, and received, a SOTL Grant through Indiana University to present research at AECT 2013 on the a virtual dialogue between pre-service teachers and in-service teachers.

- Participate in the research community by sharing research through conferences and publications.
  - Status: In Progress
  - I have submitted and presented at the AECT 2011 Conference with Dr. Anthony Betrus of SUNY Potsdam on the legal and ethical issues of a locally-stored Digital Library for the CSOLT department, and with Muruvvet Demiral at the 2012 IST Conference on an analysis of Mobile Learning at AECT. I have also presented at during a poster session for the Center for Innovative Teaching and Learning: Scholarship for Teaching and Learning on a virtual dialogue between pre-service teachers and in-service teachers, and will be presenting the same topic at the AECT Convention in 2013.