Innovations in Teachers' Professional Development
Provocation: How do we support teachers' digital identities and practices?
Discussant: Kim Jaxon

Coding Core: Helping Teachers Teach for the Future

Ann Marie Carrothers, Mozilla Foundation Hive Chicago

Winning the Best Pitch Award at Hack to the Future 2016 and presented at the international Mozilla conference, Mozfest, CodingCore provides lesson plans that teach common core subjects through digital literacy activities. Based on interviews and research with over 24 teachers and school administrators, our website allows schools to easily implement computer science coursework that goes beyond the videogame lessons of edtech sites like Code.org, but can be easily understood by teachers with no tech or CS background. Each lesson can be taught with or without technology so all students can learn no matter their resources. Feel free to check it out at cc.esntee.com.

While Coding Core is currently focused on lesson plans that incorporate the Common Core requirements, we are planning to expand our curriculum in the next few months to address finances and virtual reality.

Not Just Coding: Preparing Preservice Teachers to Develop and Foster Computational Thinking in Technology Integration

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With the new nationwide trend of the "computer science for all"movement, computational thinking becomes an important concept for K-12 teachers. In fact, "computational thinking"is named as a skill in facilitating future learners who qualify as computational thinkers and is already announced in the updated ISTE standards (2016) for students. However, critics concern that we only having our children play with programming but without deepening learning opportunities to develop computational thinking.

This research study is driven by a core question: how do preservice teachers construct their own learning and thinking to design, create, and facilitate a learning environment for students to become computational thinkers? This study aims to uncover how preservice teachers approach technology integration with coding, computational thinking, and makerspace movement resources; and to understand the barriers among teachers when enacting the ISTE standard to nurture students as computational thinkers.

There are 28 preservice teacher participants in this study who are majoring in elementary education, special education, or early childhood education. The context of this case study is a required course about technology for teaching and learning for teacher candidates at a Midwest public university. åÊThe research framework is based on Brennan and Resnick (2012)'s definition of computational thinking in three phases: computational perspectives, computational concepts, and computational practices. The researcher collected preservice teachers' reflection journals and learning artifacts to track their learning trajectories to understand their conceptual changes, including pedagogical beliefs about coding and practical ideas about how to incorporate coding concepts into curriculum. Content analysis (Saldana, 2013) along with open-coding technique will be conducted for data analysis.

Though the data analysis is underway, the initial coding categories have emerged: (a) teachers are confused by the term and definition; (b) teachers used to have stereotype on coding; (c) teachers are trying to make a meaningful connection with their own profession; (d) teachers monitor their understanding of tech integration and how their teaching beliefs echo these new concepts. This study intends to articulate teachers' thinking processes about pedagogy for coding, computational thinking, and

makerspaces from learning sciences perspectives to support future teachers' learning in the digital revolution.

Using Web-Based Practical Measures to Support Improvement at Scale: Insights from a Research-Practice Partnership
Daniela DiGiacomo, University of California Riverside

With the shared goal of continuously improving STEAM-related learning opportunities for all students, our team of researchers and practitioners is investigating equity-oriented, useful, and scalable ways to use research to inform practice. Bringing together insights from the work of research-practice partnerships (Henrick et al., 2016; Penuel & Gallagher, 2017) and improvement science (Bryk et al., 2015) we explore how 'practical measures' (Yeager et al., 2013) support educators in improving discussion in STEAM learning environments. Practical measures- 2 minute surveys of students' perception of discussion quality- are intended to be easy for educators to administer and analyze, resulting in data representations designed to help them understand and improve not only their practice of teaching, but their students' opportunities for learning.

Our work builds on what is known from the use of practical measures within longer standing university-district partnerships in large urban districts across the country (Cobb & Author, 2008). The present paper emphasizes a particular dimension of this work,the ways in which timely and varied web-based data representations support STEAM teachers to design robust, engaging, and rigorous learning environments characterized by high quality youth discussion. To do so, we use survey and interview data from a research-practice partnership (RPP) in which educators use graphic representations of their students' practical measure data as an improvement tool for their practice. Our RPP includes researchers at the University of California, Riverside and teachers from the Val Verde Unified School District. Using 2016-2017 school year data, we investigate how the use of web-based practical measures in the early stages of an RPP are 1) useful and 2) scalable as tools to support the improvement of teaching and learning practices related to STEAM content. As partners, our team of researchers and teachers present a framework for supporting fellow educators in designing and implementing web-based practical measures as tools for improvement in their practice.

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Blogs and Book Clubs: Educators' Reflection on Practice in Public Spaces
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Blogs are a space through which educators have reflected on and shared their practices from their classrooms. There is evidence that blogs promote reflective practice and social and collaborative interaction (Lieberman & Pointer Mace, 2010; Ray & Hocutt, 2006). Professional book clubs provide opportunities for self-directed learning, a diversity of perspectives, and an informal learning environment (Smith & Galbraith, 2011). This study will explore how combining both practices - reflection through blogging and participation in a professional book study - supports deep professional reflection.

The #CyberPD book club has existed since 2011 and was founded by three educators who wanted an opportunity to discuss a professional book together. They selected the first title and on their blogs and the Twitter hashtag of #CyberPD, invited other educators to join them in discussing the book. The book was divided into three sections and each week, and participants posted their reflections on a blog, through Twitter or Google+ or any other online venue, and then comment on others' postings.

Since then, the #CyberPD event launches each year in May with a call for "Summer Reading Lists" and weekly postings through July with a culminating live Twitter chat at the end of the reading. Each year participation varies, with many participants returning each year. The titles of the texts selected in the past were mostly literacy focused.

At this point, using blogs for professional learning is a fairly standard practice for educators (Ciampa & Gallagher, 2015) as it provides a space for reflection, sharing practices, authentic audience, and networking. However, most studies of in-service teachers' use of blogs focus on the general use of blogs or a survey/interview of educator-bloggers about their motivation and benefits/challenges of blogging. This study seeks to understand the types of reflection that occurs when blogs are used for a specific purpose - an online book club. Using Rivera's (2016) Reflective Writing Continuum, I conducted a content and discourse analysis of the selected blogs.

Making Online Professional Development Program Accessible to Educators Worldwide
Yumiko Murai, MIT Media Lab

Online professional development has increasingly become a common practice in the past few years making quality learning opportunities accessible to many educational professionals. However, like any other online learning programs, the language being used and familiarity to the learning style could be critical obstacles for learners. This is particularly the case when the program requires more than just reading and watching, such as discussion and project-based collaboration.

This presentation will introduce findings from a pilot program held in February 2017 that explored the

issues of access and participation in the online professional development program for Japanese educators.

The original version of the online program was designed to introduce the creative learning approach (Papert, 1980; Resnick, in press) to the educators around the world through highly interactive project-based learning activities and was successfully held three times attracting hundreds of participants worldwide. However, there were limited participants from non-English speaking countries even though the program was an open course, where anyone could look up materials and participate in the discussion online without any cost.

To explore ways to reach out to a more diverse audience, we conducted a three-week pilot program specifically targeting educators from Japan, which was one of the countries that had the least number of participants in the past programs despite its emerging interests in programming education and active learning. This pilot program was held entirely online using a website, videoconferencing and chat tool, directly applying the materials and activities designed for the past version with additional translation. In total, 69 people signed up, and 20 took part at least some of the activities.

We collected and analyzed the interviews, surveys, and chat history of the participants to explore 1) the types of challenges Japanese-speaking adult learners would face when they try to participate in a highly-interactive English online courses, 2) how they may overcome those challenges, and 3) what the valuable informal online professional development programs could look like in the Japanese context.

The findings from this project provide valuable insights to any online learning programs that aim to provide access to the global learners.

Katherine McConachie, MIT Media Lab

Philipp Schmidt, MIT Media Lab