Facilitating Change: A Study of Supporting Teacher Learning

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Abstract: This article examines efforts to implement the Scratch Educator Meetup model in order to accommodate the growing number of teachers involved in supporting computing education. Scratch Educator Meetups are focused on supporting teacher co-construction and participatory learning using a professional learning community approach. Previous literature on teacher professional development suggests that professional learning communities play a key role in promoting instructional improvement, and that facilitators are central to this process. Following this theoretical orientation, we share an ethnographic case study that details the tensions, contradictions, and possibilities that can arise when a professional development facilitator eschews familiar models of supporting teacher learning in favor of a novel approach. We argue that implementing instructional improvement initiatives demands careful attention to the qualitative dimensions of change, change that occurs as facilitators learn to think and act in new ways.

Keywords: models of professional learning, model implementation, facilitators, Scratch Educator Meetups

Introduction

Supporting teacher learning is an essential component of supporting student learning (Borko, 2004). This is especially true when teachers lack prior experience or expertise with what their students are learning. K–12 computing education—where there is currently enormous interest but a deficit of experience—exemplifies the need to support teacher learning. In this paper, we describe the Scratch Educator Meetups model, which we have designed to support computing teachers working with the Scratch programming language, and our efforts to implement the model more broadly. We foreground the perspective of a facilitator, a key agent who interprets and enacts the model as she negotiates several competing demands during her implementation efforts. The paper is organized in 5 parts. First, we review literature about teacher learning, with a focus on teacher learning communities and the facilitators who support learning in such settings. Then, in *Context*, we briefly describe the computing education landscape and our approach to supporting computer science educators through meetups. In *Methods*, we describe our data collection and analysis process, and the core assumptions that guide our methodological approach. In *Findings*, we consider the Scratch Educator Meetup model from the perspective of a meetup facilitator, focusing on her motivations and sense-making. Finally, we end with reflections that underscore the need to consider the qualitative dimensions of change, and discuss implications for future design activities.

Theoretical background

Professional development: for some teachers, the phrase conjures memories of dull evenings spent politely listening as outside experts deliver lectures, complying with an administrator's vision of professional learning. In recent years, this approach to "teacher training" has increasingly come under scrutiny for embodying an approach to teaching and learning that is "old school" in the literal sense, positioning learners as passive recipients of knowledge rather than active agents in the construction of knowledge (Darling-Hammond & Bransford, 2007; Putnam & Borko, 2000). Not only are teacher training experiences less than ideal in terms of supporting dynamic teacher learning, they also provide little inspiration for teachers hoping to design more powerful learning experiences for students. As Grossman (2005) argues, "In the professional preparation of teachers, the medium *is* the message" (p. 426) and when teachers are not afforded the space to inquire, design, test, and reflect in their own learning, it is less likely that they will be in a position to create similar experiences for students.

In contrast, professional learning communities have been viewed as a promising alternative that can support effective professional development. Characterized by Whitford and Wood (2010) as "small groups of educators who meet regularly to engage in systematic, ongoing, peer support and critique in order to improve their educational practices and student learning," (p. 2) scholars across multiple disciplines point to several benefits associated with sustained participation in professional learning communities. Such communities are culturally responsive, enabling teachers to pursue learning goals sensitive to the unique demands of particular teaching

contexts (DeLuca et al., 2015), supporting the forms of collaboration useful in helping teachers incorporate new ideas in practice (Owen, 2014), and promoting a more robust sense of professional identity (Westheimer, 2008). For these reasons, professional learning communities have been promoted as a key strategy for supporting teachers as they endeavor to become change agents at the center of learning innovation and school reform (Rogoff, 1994; Vescio, Ross, & Adams, 2008).

And yet, implementing effective professional learning communities is a challenging endeavor. Establishing a successful professional learning community often entails creating a new culture of learning marked by a sense of shared responsibility, vulnerability, and trust (Vangrieken, Meredith, Packer, & Kyndt, 2017)—a participatory culture that is often at odds with the norms of schooling. In doing so, participatory cultures promote teacher buy-in and agency, increasing the likelihood of sustained engagement in professional learning over time (Butler, Schnellert, & MacNeil, 2015; Voogt et al., 2015). Recent literature examining the dynamics of teacher learning communities suggests that facilitators play a central role in establishing the conditions needed to sustain engagement in teacher learning communities (Mcleod, 2015; Nelson, Slavit, Perkins, & Hathorn, 2008).

Unlike conventional approaches to teacher professional development, in which facilitators may be especially attuned to supporting individual teacher growth, in professional learning communities, facilitators are responsible for shaping the growth of a self-led social system (Stein, Smith, & Silver, 1999). In part, facilitators do so by participating in the community as co-learners, modeling the inquiry skills and dispositions that are particularly conducive to the co-construction of new knowledge (Jones, Gardner, Robertson, & Robert, 2013). Yet perhaps more crucially, facilitators are responsible for designing the cultural conditions necessary for productive participation, developing norms that help orient others to key community activities, providing structure for group work and processes, and fostering the sense of psychological safety needed to nurture ongoing participation and growth (Brouwer, Brekelmans, Nieuwenhuis, & Simons, 2012; Cranton, 1999). This work entails navigating complex group dynamics, and facilitators are often faced with a dilemma: on the one hand, they risk undermining the transformative learning goals of participatory learning experiences by providing too much guidance, but on the other hand, they risk providing too little guidance for a meaningful learning experience.

Although this recent scholarship now points to the crucial role facilitators play in nurturing impactful professional learning communities, little is known about how facilitators make sense of their roles and the challenges they encounter as they endeavor to support teacher learning in professional learning communities. In response to the theoretical issues raised in this literature review, we now describe the empirical context that motivates our study and our approach to supporting teacher learning in the realm of computer science education.

Context

Many educational policymakers and system-level leaders throughout the United States share a belief in the urgent necessity of providing computer science education in K–12 public schools. Advocates argue that developments in today's technology-driven culture create increased demand for computational literacy, positioning computer science education as a pathway to greater economic opportunity (Blikstein, 2018; Kafai & Burke, 2014). This mainstream "CS for all" policy narrative has catalyzed widespread interest and investment in broadening access to computer science education in K–12 public schools, and in recent years a number of school systems have implemented new initiatives positioning computer science education as a key target of educational reform (Margolis, Ryoo, & Goode, 2017).

Like other reform initiatives, teachers are central to this process, and in response, we have been designing and studying the Scratch Educator Meetups Network, a collection of over forty professional learning communities focused on computer science education. Regularly scheduled meetups, which are participatory learning experiences for educators, are a central component of the Scratch Educator Meetups model (Brennan, 2015). Unlike conventional approaches that follow a pre-planned agenda established by an outside expert, meetup agendas are co-constructed by participants themselves and emerge during the event. Part one of a meetup involves networking and introductions, in which people can (re)connect with one another. Part two, the heart of the meetup, consists of a collaborative schedule-building process and self-organized breakout sessions. This is where participants define learning goals that suit their interests and divide into smaller groups to pursue those interests. Part three involves sharing breakout group experiences and general group updates. Within meetups, teachers often share their lesson and unit plans with each other, comparing strategies for designing learning environments: how much structure to provide, what roles people play in the environment, and which resources to make available.

As designers, we hope that meetups will reflect the impactful professional learning experiences Darling-Hammond and Oakes (2019) describe, where "learning occurs through the interaction of people, problems, ideas, and tools as people get feedback from their actions and about their ideas" (p. 257). As we have pursued this goal over the past several years, our attempts at putting theory into practice have brought lessons gleaned from recent literature on professional learning communities into sharp relief. We too have found that facilitators are key agents

in supporting the meetup experience—and are thus critical to supporting the implementation and spread of meetups more broadly. The decisions they make in their roles as facilitators fundamentally shape how participants come to understand and experience the meetup model. As a result, we have been preoccupied with understanding how facilitators interpret the meetup model and the factors that influence their decision-making and actions. Though we have often encountered practices that deviate from our preferred vision of supporting meetups, our goal in this paper is not to document deviation. Rather, we are interested in understanding the deeply human reasons why models designed to support ambitious learning can be challenging to enact in practice, and how we can better support the key agents involved in this ambitious work. Thus, in this paper, we consider the following research questions: *how does one facilitator make sense of the meetup model, and what factors influence the facilitators' efforts to take up new ideas and approaches in practice?*

Methods

Because the research questions we pose are concerned with how phenomenological experiences are shaped by context, this study is ethnographic in nature. Ethnographic pursuits underscore that people construct consequential meaning through an interpretive process and as a result, ethnographic projects commonly aim to develop rich descriptions of how actors perceive and participate in their social worlds and understandings of how behaviors are patterned by larger cultural and organizational contexts (Hammersley & Atkinson, 2007). Following this orientation towards the nature of knowledge production, this paper presents an ethnographic case study of meetup facilitation efforts in one geographic area. This approach is guided by prior literature that centralizes the importance of the facilitator as a key agent in supporting effective professional development (DeLuca et al., 2015; Nelson, Slavit, Perkins, & Hawthorn, 2008), and literature on implementation science, which recommends that learning innovation efforts begin with small-scale exploratory pursuits aimed at generating a theory of action (Hill, Beisiegel, & Jacob, 2013). In doing so, we aim to provide a larger window into how a facilitator approaches the work of guiding participatory teacher learning—effort that involves not just action, but an ongoing process of sensemaking, negotiation, and reflection.

Following Small (2009), we contend that a "small n" study is best suited to our goals. Focusing on one facilitator allows us to develop a nuanced and in-depth analysis of the social and psychological factors that shape facilitation efforts—factors that are currently poorly understood yet ultimately critical to understanding how we can better support the key agents that guide innovative teacher learning. We complement this methodological approach with the "critical case" sampling strategy outlined by Denzin and Lincoln (2011). Because this strategy calls for purposeful sampling in order to make defensible inferences about larger phenomena of interest, we chose to locate our study within a large metropolitan city due to key ecological factors that are consistent with meetup implementation efforts elsewhere. First, like many other cities, this city was in the early stages of rapidly expanding computer science education throughout a very diverse public school system and therefore mirrored political and demographic trends in other metropolitan cities. Second, because our partner Meredith (a pseudonym to protect the facilitator's privacy) was a seasoned computer science educator and experienced professional development facilitator, her profile was similar to many facilitators that organize meetups throughout the United States. Further, based on fieldwork examining meetup implementation in six other metropolitan cities, we observed that the implementation challenges Meredith experienced were consistent with those we observed elsewhere—making her a representative case particularly suitable for an in-depth investigation.

To gain a fuller picture of Meredith's efforts to implement meetups, we conducted monthly three-hour participant observations at her meetups as well as formal and informal interviews with Meredith over a one year data collection period. Interviews included questions about Meredith's prior experiences leading teacher professional development, her perceptions of the meetup model, her goals for supporting teacher professional development, and her role as a facilitator. These conversations allowed us to probe the experiences, interpretations, and assumptions that guided Meredith's efforts to enact meetups. The data that is shared in this paper come from two key interviews that provided the greatest insight.

Analysis of interview transcripts and field notes followed the "sequential" approach outlined by Corbin and Strauss (2008), whereby data analysis was conceived as a recursive project that occurred alongside data collection. We consolidated initial line-by-line coding into several analytic categories relevant to understanding the meanings of meetup interactions from the facilitator's perspective—particularly those interactions that aligned with and departed from our own understandings of the meetup model. These initial analytic categories included perceived purposes, practices, values, strategies, beliefs, and challenges. Using the selective coding approach described by Emerson, Fretz, and Shaw (1995), we coded subsequent data with these categories to identify the recurring themes, and we wrote regular reflective and theoretical memos throughout this process to complement our data collection efforts.

Findings

In the following sections, we elaborate on the understandings Meredith constructed about meetups and how these understandings influenced her implementation efforts. In particular, we examine Meredith's initial motivations and identify the key waypoints that guided her implementation efforts. We find that even as Meredith's motivations are aligned with our design aspirations for supporting teacher learning through meetups, her implementation efforts were influenced by prior experiences, uncertainty, and ultimately, her reluctance to relinquish a more traditional leadership role.

Creating community

Meredith learned about the Meetups expansion project in the Spring of 2016 and volunteered to partner with us to organize a meetup at a local K–8 public school. Like other partners, Meredith's initial experience with the meetup format occurred in the context of attending the meetup as a participant. Reflecting on this initial experience, Meredith explains her initial perceptions of the meetup and her motivation for facilitating meetups in her region.

> I thought it was really successful—it felt like we had community there. The whole point of having a meetup is to have a group that comes together to share resources and talk about how to teach computer science using Scratch. This can be so beneficial because sometimes it's so lonely and you really don't know what to do.

Meredith's response reveals her preoccupation with forming a professional learning community to disrupt patterns of isolation that hamper professional development. While teacher isolation is commonly regarded as a key challenge in the socialization and ongoing professionalization of the teaching force, Meredith's candid reflections underscore the particularly acute challenges facing computer science educators. Characterized as a field that has had "little pre-service or ongoing professional development for teachers" (Margolis, Ryoo, Goode, 2017, p. 3), computer science teachers enter the classroom with less pedagogical content knowledge than peers in other subjects (Lang et al., 2013) and are often the sole provider of computer science instruction in their schools (Yadav, Gretter, Hambrusch, & Sands, 2016). Together, these factors exacerbate the sense of professional isolation Meredith describes and motivate her desires to support the development of a professional learning community.

Within this conception of establishing a professional community through meetups, Meredith envisions meetups as a space where teachers will provide intellectual support for one another by sharing, critiquing, and improving lessons in order to "learn new things, and share what we know with our community." Meredith reasons that belonging to a "caring" teacher learning community will be particularly helpful for the many isolated novices tasked with teaching computer science, because others "will go above and beyond" in providing the forms of affective and intellectual support needed to be successful.

Interestingly, Meredith's formulation of a professional learning community echoes many of the best practices espoused in literatures on teacher learning communities. Effective teacher learning communities encourage discussion and reflection around open-ended problems of practice, provide opportunities for novices to learn from more experienced peers, and model the forms of constructivist teaching and learning needed to support deeper disciplinary understandings—providing essential scaffolding to teachers learning to teach in new ways (Darling-Hammond & Oakes, 2019; Grossman, Wineburg, & Woolworth, 2001). And yet, as a facilitator charged with guiding the formation of a new teacher learning community, Meredith faces a unique set of challenges. At the same time that Meredith endeavors to construct a "caring" culture of professional learning—the kind of culture marked by a "sense of belonging, association, and fellowship" (Westheimer, 2008, p. 766) necessary to encourage ongoing participation—Meredith must also ensure that the community fosters the forms of new learning and expertise that are the hallmarks of robust professional learning communities. As we see below, this dilemma comes into focus as Meredith navigates her role as a meetup facilitator.

Reinterpreting meetups

Because teachers need more powerful encounters with professional learning in order to make ambitious learning experiences available in their classrooms (Darling-Hammond & Bransford, 2007), teacher co-design and participation ideally lies at the heart of meetup experiences. However, Meredith's motivation in supporting a professional learning community through meetups is tempered by doubts about whether a participant-led design can be effective in her context.

> I would say in my teaching it's more constructivism, it's inquiry, for sure. As a facilitator, that's interesting. I would say I don't really look at a meeting as constructivism as much. That's what

> all meetups are based on sure, on the constructivist idea, but the teachers I work with, I would say I don't feel they're as creative as they can come to a meeting and then decide what they want to talk about and then talk about it at that moment. Maybe it's a personal interest, but when I go to an event after school hours, I want to leave with something to make it worth my while that I've given up part of my evening. If you go to the meeting and the person who's running the meeting isn't prepared, it's wasting our time.

Meredith begins to highlight a series of tensions that become relevant as she negotiates her role as a meetup facilitator. First, in light of Meredith's notions that teachers should "leave with something," the tension of efficiency becomes salient. In contrast to constructivist approaches that emphasize learner-centered inquiry, Meredith suggests that professional learning experiences must be designed to deliver clear takeaways. Here, Meredith's narrative echoes ongoing debates about constructivist learning. While constructivist traditions have been credited with providing meaningful opportunities for learners to engage in interest-based exploration, connection-making, and discovery (Bransford et al., 2000; Hmelo-Silver, Duncan, & Chinn, 2007), scholars have also noted how such approaches are time-intensive, entailing considerable trial and error with unpredictable results (Kirschner, Sweller, & Clark, 2006). In extending this conversation to the realm of professional development, Meredith's narrative reveals the decision-making factors that other professional development facilitators may face. Because time pressures are a significant constraint for educators that navigate many competing priorities, facilitators may experience the open-endedness of constructivist learning as risky rather than freeing.

In Meredith's case, because she feels that teachers need to "leave with something" and because she is concerned that teachers will be unable to direct their own professional learning, she is not confident that a participatory approach will yield meaningful professional takeaways. In addition, because Meredith believes that "good facilitators" are ultimately responsible for ensuring meaningful professional takeaways, she is reluctant to relinquish a more conventional leadership role. Faced with this dilemma, Meredith rationalizes the need to put a "short spin" on the model by introducing pre-planned, expert-led sessions in place of the collaborative schedule-building and self-organized breakout sessions. Invoking the language of comfort and trust, she explains:

> It may work. I bet it will work. Because it'll give me more time—at least I know I've gone in there with something solid, at least one thing planned well. And that can definitely improve my comfort with the meetup. And also it will build trust in our community—that this will be something that they will want to do and are committed to coming back every month and participating in.

Meredith suggests that this adaptation would enhance the meetup's viability, allowing her to achieve the buy-in needed to sustain the meetup community over the long-term. However, while this adaptation is designed to mitigate some of the risk and uncertainty Meredith experiences, this approach undermines the model's intent. The meetup's emergent structure is intended to provide conditions that allow teachers to take greater ownership over their learning, and altering this format diminishes opportunities for teacher co-construction and participatory learning. As a result, Meredith's prior frames of reference, her assumptions about professional learning, and her understandings about her responsibilities as a facilitator motivate her to reproduce what is familiar: over the next few months, she defaults to hosting meetups that resemble more conventional approaches to professional development.

Dislodging assumptions

Following Meredith's initial facilitation efforts, members of the research team co-facilitated a meetup with Meredith in Fall 2016. Envisioned as a mechanism for supporting meetups expansion more broadly, this experience was intended to model the meetup format while providing the primary facilitator with an opportunity for guided participation and reflection. During this meetup, members of the research team shared an overview of the Scratch Educator Meetup Network and facilitated a schedule-building activity that engaged participants in co-designing the meetup agenda. At the end of the collaborative schedule building process, participants identified several topics for exploration and sharing. These topics ranged considerably, from introducing Scratch in the classroom, to sharing resources and considering best practices for teaching English language learners. Participants choose which sessions to attend based on their particular needs and interests, while Meredith facilitated one of several concurrent break-out sessions.

Contrary to Meredith's assumptions that teachers would be unable to direct their own learning productively, this experience proved to be a turning point. Meredith began to recognize that participants "actually were very good about putting their ideas up on the board and talking to one another and learning from one

another." Reflecting on the productive conversations she witnessed, Meredith says that she "felt so good at the outcome" despite her initial skepticism. She explains:

> To see people engaged in a good conversation about what we're teaching and learning, or improving your practice—that's a joyful moment. And they wanted to have a conversation with other teachers to forward their own practice for the benefit of our kids… Everyone was engaged and it was equitable because we were addressing different needs. It was powerful and it educated me as to hey maybe there's something to this meetup that addresses equity, that is dynamic.

Although Meredith's prior understandings of teacher professional development motivated her to schedule pre-planned sessions, the contrast between this meetup experience and her prior experiences as a leader of more traditional forms of professional development became salient:

> I really think this meetup was more powerful than the one before. Previously, I felt like it was more of direct instruction, where I felt like I was trying to share an idea. And maybe that wasn't equitable because I just decided that that was what we'd talk about, and as time went on, I didn't think it made sense to break out into sessions, but I should have. We were focusing on what I thought would interest folks, but maybe I wasn't really addressing equity there.

In this reflection Meredith begins to formulate connections between the participatory meetup format and her aspirations for supporting equitable teacher learning. As Meredith begins to understand the meetup as a purposeful structure for supporting equitable learning, she re-examines previously held assumptions about teacher learning. Her reflections suggest that moving forward, she may be willing to reconsider her role as a professional development facilitator.

Discussion and implications

Previous literature on teacher professional development has highlighted the role professional learning communities play in guiding instructional improvement, and facilitators have been characterized as agents who are "crucial to the success" (Borko, 2004, p. 10) of these efforts. In this work, we have foregrounded the critical perspective of the facilitator in order to understand the micro-level negotiations that key agents make—negotiations that have the potential to both enable and constrain the conditions needed to support robust teacher learning.

An in-depth study of Meredith's experiences over a year offers us a powerful window into the tensions, contradictions, and possibilities that can arise when a professional development facilitator eschews familiar models of supporting teacher learning in favor of a participatory approach. While it is easy to understand Meredith's decision to incorporate pre-planned sessions, an adaptation that undermined our intent, we believe it is more important to understand how Meredith conceived of this decision. Our research suggests that Meredith viewed this adaptation as a short-term solution that would enable her to navigate the unique challenges that emerge during the initial stages of establishing a teacher learning community. As the facilitator of a new meetup group, Meredith's primary concerns centered on building the participation and buy-in needed to enact her vision of a "caring" meetup community. In many ways, this preoccupation stems from Meredith's prior experiences. As a veteran teacher-leader Meredith is accustomed to "teacher training" approaches to supporting teacher learning—approaches that tend to place power and expertise in the hands of a single leader. In turn, this approach provides a comfortable frame of reference that Meredith draws on as she negotiates her role as a meetups facilitator—a frame of reference that is ultimately at odds with the model's participatory aspirations.

Understanding a facilitator's experience offers us a way to better understand and appreciate the complexities that arise as models designed to support professional learning are interpreted, adapted, and implemented by local actors. Importantly, our initial theory of action surrounding meetups implementation failed to recognize the distinction Elmore (2016) draws between implementation and learning. While implementation can be understood as a technical challenge that involves "something you do when you already know what to do" (p. 531), by contrast, learning is an adaptive challenge that involves "something you do when you don't yet know what to do" (p. 531). With respect to the meetups model, which aims to unsettle long held assumptions about learning and expertise, we argue that Elmore's distinction between implementation and learning underscores a profound need to rethink conventional understandings of the relationships between learning, innovation, and implementation. As Elmore (2016) suggests:

> When we are asking teachers and school leaders to do things they don't (yet) know how to do, we are not asking them to ''implement'' something, we are asking them to learn, think, and form their identities in different ways. We are, in short, asking them to be different people. (p. 531)

In the case of Meredith, we now appreciate that the task of implementing meetups was not a technical challenge, but an adaptive challenge that involved a process of sensemaking, negotiation, and reflection in service of new learning. In particular, because we found ample evidence that Meredith struggled to reconcile new ideas with deep-seated notions of professional development, our work draws attention to the role of accommodation in learning—and the need to develop experiences designed to aid the process of accommodating new ideas in practice. In contrast to assimilation, which involves connecting new knowledge to existing ideas and frameworks, accommodation involves revising existing ideas and frameworks to integrate new understandings. Our work with Meredith suggests that it may be possible to support the process of accommodation by providing opportunities for reflection. While interviews conducted with Meredith were not originally intended for this purpose, these interviews functioned as both a data collection strategy and an opportunity for Meredith to articulate and interrogate connections between her beliefs, prior experiences, aspirations, and actions. As such, we believe that guided reflection activities may be a promising strategy for supporting the interpretive work that is inherent in understanding and enacting more ambitious approaches to learning—learning that is often championed at a theoretical level, but remains difficult to enact in practice.

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