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How do on-site teacher educators approach professional development? A study of insider/outsider hybridity

Catherine Lammert ^a, Eric Antwi Akuoko ^b, Jee Kyung Suh^c, Brian Hand^b
and Gavin Fulmer^{b,d}

^aDepartment of Teacher Education, Texas Tech University, Lubbock, TX, USA; ^bDepartment of Teaching and Learning, University of Iowa, Iowa City, IA, USA; ^cDepartment of Curriculum and Instruction, University of Alabama, Tuscaloosa, AL, USA; ^dSenior Research Scientist at NWEA, Portland, OR, USA

ABSTRACT

In-service professional development is important for improving teaching. However, little research has examined how the roles, beliefs, and backgrounds of the individuals providing professional development can best be leveraged to create effective professional development programmes. A particularly understudied group are community-based On-Site Teacher Educators (OSTEs) who can serve as the bridge between university-based faculty and school employees. OSTEs are aware of the realities of classroom spaces, yet work outside of them, giving them a hybrid capacity to support teacher learning. In this exploratory qualitative multiple case study, the perspectives and practices of three OSTEs are examined as they supported elementary science teachers ($n = 119$) in multi-year professional development. Findings indicate that OSTEs have strong alignment between their professional development practices and their beliefs about knowledge and learning. OSTEs revealed that they are introspective about managing the gap between university faculty and classroom teachers. Cross-case analysis revealed that OSTEs identify a tension between affirming teachers as professionals and productively challenging teachers' assumptions. To address this, they use modelling, co-teaching, and dialogue inside a stance of teaching as intellectual work. In sum, this research suggests that professional development provided by OSTEs can lead to transformative change in schools.

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Introduction

Professional Development (PD) provides opportunities for teachers to develop new orientations towards teaching and improve their instructional practices (National Research Council, 2012). Since educational policy is continually reformed, it is imperative that PD continues into the in-service years. In the field of science education, PD studies often focus on improving science teachers' content knowledge (Zhang et al., 2015) and self-efficacy for teaching science (Powell-Moman & Brown-Schild, 2011) with the ultimate goal of improving student performance.

CONTACT Catherine Lammert  Catherine.Lammert@ttu.edu  Department of Teacher Education, Texas Tech University, 3002 18th St, #362, Lubbock, TX 79409, USA

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While PD of this nature has advanced teacher knowledge, the emphasis on measuring what teachers learn from PD has eclipsed attention to the nature of PD providers themselves (Perry & Booth, 2021). In particular, the trend has been to define the features of effective PD without considering the roles of PD leaders (Lange & Meaney, 2013). Organizational change theories suggest that individuals' social and professional positions as insiders or outsiders are relevant to their ability to support others' learning (Coburn et al., 2008; Nigam et al., 2022). Thus, understanding the approaches of those who provide PD is essential to broadening the conceptualization of and conversations about teacher educators (Souto-Manning & Martell, 2016; Zeichner et al., 2015).

To address this need, we focus on On-Site Teacher Educators (OSTE; Levin & Rock, 2003), defined as PD providers who are not tied through full-time employment to either universities or schools. To understand how OSTE's use various approaches and overcome challenges, we utilized a lens of teaching as intellectual work (Giroux, 1985; 2018) to examine the roles and beliefs of OSTE's. Although we provide a substantial description of the PD to contextualize the current study, we have reported on the PD's content elsewhere (Lammert et al., 2022; Suh et al., 2023). Rather, the purpose of this study was to better understand how OSTE's leverage their role to support teacher learning. This exploratory multiple case study, which draws on OSTE's work in a multi-year study of PD to improve elementary science teachers' instructional practices, explores OSTE's roles. The Research Questions (RQ) that guided the study are:

RQ 1: What approaches to supporting teacher learning do OSTE's employ?

RQ 2: How do OSTE's address the challenges they face in supporting teacher learning?

Literature review

Three research bases inform this study: literature on in-service PD in science, literature on teacher educators' roles, and studies of teacher educators' beliefs.

In-service PD in science

Major changes in expectations placed on science teachers in the past decade make elementary science teacher education an ideal space to explore the role of OSTE's. Internationally, OECD (2019) has provided a vision for science teaching in which students are active inquirers. In the U.S. context where the current study occurred, current reforms in science education emphasize the Next Generation Science Standards Lead States (2013). Despite PD efforts, teachers' challenges in implementing the NGSS have been noteworthy (Fulmer et al., 2018). Largely, the adoption of NGSS has demonstrated the truism that "it is far more difficult to figure out how to implement a theory than it is to generate it" (Pogrow, 1996, p. 658). For the theoretical vision of OECD (2019) and the NGSS (2013) to be enacted, substantial shifts are required in teachers' understandings and practices, and OSTE's have a key role to play.

While PD in science is essential, more is known about the structure of elementary science PD than about the individuals providing it (Klein & Gombay, 2008). For example, the duration of PD is clearly a factor, and PD commonly spans multiple years (e.g. Powell-Moman & Brown-Schild, 2011). However, Desimone and Garet (2015) found that the minimum duration of PD needed to positively impact teaching practice exceeds what is typically provided. Further, no studies to date have examined whether the question of PD duration is impacted by the role held by PD providers, leaving those designing PD without clear directives.

Existing research also suggests that a tension exists around whether PD should be fundamentally theoretical or practical (Timperley et al., 2007). Zeichner (1983) has argued for PD to emphasize the “question of which educational, moral and political commitments ought to guide our work in the field rather than . . . dwelling on which procedures and organizational arrangements will most effectively help us realize tacit and often unexamined ends” (p. 8). Building on this view, we recognize that OSTE’s could provide transformative PD, but the minimal attention they have received renders this contribution unclear. Thus, we aim to analyse OSTE’s approaches and practices for overcoming challenges for the purpose of strengthening future PD offerings.

Teacher educators’ roles in in-service PD

Providers of in-service PD vary in their relationship to the universities and schools with/in which they work. One way to conceptualize these roles is as falling across a spectrum from most school-based to most university-based (Coburn et al., 2008). The most school-based teacher educators continue teaching their own K-12 classes in addition to providing PD and are often referred to as mentors or coaches (Lammert & Ash, 2022; Lammert et al., 2020; Sailors & Shanklin, 2010). These individuals serve a valuable role as insiders to school norms and values (Souto-Manning & Martell, 2016). On the opposite end of the spectrum are university-based teacher educators employed as faculty who provide supplemental PD to schools. Due to their involvement in academic research, these individuals may be the most abreast of alternatives to existing practice in schools, but they may also be the least trusted by teachers due to their outsider status (Nigam et al., 2022; Zeichner et al., 2015). In the middle of this spectrum are community-based OSTE’s such as those in the current study. These individuals have the unique advantage of being insiders to the norms of schools, which lends credibility, while also being knowledgeable of trends in research, which enables innovation (Coburn et al., 2008). Simply being an OSTE does not render an individual an effective PD provider. It is likely that some are neither research-savvy nor knowledgeable of teaching trends. However, well-prepared OSTE’s can leverage their insider/outsider liminality to promote teacher learning in ways unmatched by those in other roles.

Teacher educators’ beliefs about in-service PD

Whether they centre their work in schools or the university, teacher educators’ beliefs are relevant to the PD approaches they take (Borko, 2004; Richardson, 1996). Although the construct of “belief” can be difficult to define (Pajares, 1992), prior research suggests that

teacher educators' beliefs about learning and the teaching profession influence their PD approaches (e.g. Brownlee et al., 2017).

Of relevance to this study are OSTE's epistemic beliefs, defined as their beliefs about how knowledge is generated (Hofer & Pintrich, 1997). Myriad studies have demonstrated the link between teachers' epistemic beliefs and their enacted instructional practices (Brownlee et al., 2017; Feucht et al., 2017; Hofer & Pintrich, 1997). Generally, teacher educators whose epistemic beliefs posit that knowledge is static and created by experts tend to enact this belief. In coaching dialogues, Douglas (2011) found that school-based teacher educators who held such beliefs wanted other teachers to "copy and master" (p. 98) their practices. Alternatively, teacher educators who view knowledge as fluid and evolving tend to enact approaches based on co-inquiry and reflection (Keay et al., 2019). Thus, it is important to understand PD providers' beliefs in general, and epistemic beliefs in particular, to contextualize the approaches they employ.

Theoretical framework

This research rests on a social constructivist perspective which assumes that people use conceptual and practical tools to solve problems and mediate their own knowledge in settings imbued with cultural, social, and historical significance (Vygotsky, 1978). This perspective is useful for understanding OSTE's approaches since school reforms are driven by different perspectives on the role of school/university partnerships in creating change (Coburn et al., 2008). Today, the dominant theory of the pathway to building teachers' knowledge and practices is one aligned with technical views of teaching and what Freire (1970) termed banking or transmission models of learning. These efforts promote teachers' adoption of pre-approved practices determined by university-based researchers. In critiquing these attempts, Mosley Wetzel et al. (2017) have argued that these technical views are popular not because they are more effective, but because they "serve an educational system that is oriented towards accountability and efficiency" (p. 13). Similarly, Giroux (1985) has criticized programmes where 'instead of learning to raise questions about the principles underlying different classroom methods, research techniques and theories of education ... [teachers] get preoccupied with learning the "how to" and "what works" (p. 377). Banking models and technical views do little to shift teachers' underlying perspectives on how student learning operates since they fail to maximize teachers' agentic opportunities to authorize their own understandings and knowledge (Biesta, 2017).

An alternative approach, and the one adopted in this research, is that PD must transcend its focus on modifying teachers' behaviours, and instead, focus on engaging teachers' belief systems. In conceptualizing a more effective approach, Giroux defines teachers not as technical workers, but as transformative intellectuals. Transformative intellectuals take "active responsibility for raising serious questions about what they teach, how they are to teach, and what the larger goals are for which they are striving" (Giroux, 2010, p. 3).

In conceptualizing this research, we recognized that, depending on their approach to working with teachers, OSTE's can "dignify the human capacity for integrating thinking and practice" (Giroux, 1985, p. 30). In this study, OSTE's work was examined through this sociocultural constructivist lens to understand how they viewed teachers as possible

intellectual agents (Biesta, 2017) of school change. The theoretical framing of teachers as transformative intellectuals (Giroux, 2010, 2018) provided us with a guidepost to understand how the approaches taken by OSTE were either informed by a knowledge banking approach (Freire, 1970) and a transmission model of learning (Mosley Wetzel et al., 2017) or one oriented towards viewing teachers as fellow intellectuals.

Methods

A multiple case study (Yin, 2014) was selected as the ideal method to understand the approaches and practices used by OSTE. Given that the role of OSTE is far from established, an exploratory approach, rather than explanatory approach, was operationalized to improve the validity of findings (Yin, 2013).

Participants

Participants are three OSTE who led in-service PD during research focused on improving elementary science teachers' practices. Notably, OSTE occupied a space that was neither completely university-based nor completely school-based, which is central to understanding how this role influences PD. Each OSTE was primarily self-employed, retired, or employed by a regional state-funded education service provider. They were not employed directly by the school districts or schools in which the teacher participants ($n = 119$) in the PD taught. Neither were they full-fledged university employees. For their work as OSTE, they received stipends from a grant secured by faculty and administered through the university, but they did not have continuing employment at the institution that generated this research. Thus, they existed in the liminal space of community-based OSTE, with connections to both schools and the university.

Context

The OSTE in this study each separately led PD designed to promote a model termed the Science Writing Heuristic (SWH, Keys et al., 1999). Each OSTE was assigned to a "cluster" of 35–40 teachers in a rural midwestern state in the U.S.A. All names are pseudonyms.

The OSTE met regularly with university faculty to design PD. Given that each cluster varied demographically and in terms of teachers' background knowledge about SWH, the university-based research team encouraged OSTE to develop the activities, discussions and practices for their work with teachers. Thus, the term "workshop" was widely used to describe the PD to suggest active professional learning and construction of novel practices and ideas.

Year one

During the first summer, each OSTE led a total of 6 days of PD that emphasized SWH (Keys et al., 1999). Briefly, this approach emphasizes the role of language, dialogue, and argument in science learning. In the first sessions, teachers generated definitions of language, dialogue, and argument in small groups and negotiated how they would share these concepts with their respective elementary students. Then, teachers were encouraged to structure science teaching by using student-originated questions as the

basis of investigations and use dialogue to help students connect their observations to the big ideas of science. Examples from local classrooms were provided. After PD, OSTE conducted classroom observations of teachers in their cluster at least twice across the school year. At these visits, they provided individualized coaching depending on teachers' comfort with SWH and in relation to the specific curricular resources they had available for teaching science. During the school year, OSTE also led 3 days of cluster-based PD focused on teachers' ongoing questions. Again, each OSTE structured these sessions with consultation from faculty.

Year two

In the second summer, due to COVID-19, PD shifted to a virtual environment and was combined into one all-cluster workshop. Thus, the three OSTE planned collaboratively with one another and were encouraged to design this experience as they saw fit. Specifically, OSTE were asked to ensure that the morning sessions included guest speakers and were conceptually focused, while the afternoons were practically focused by including teacher sharing, lesson design and pedagogy. However, the content of each day was negotiable and emerged through shared planning. The context of shared planning provided a space in which OSTE were asked to articulate their goals, collaborate, and construct a workshop consistent with their understanding of teacher learning. Again, they promoted the SWH (Keys et al., 1999) approach and deepened teachers' knowledge of how to use language, dialogue, and argument to drive student learning in science.

Data sources

We utilized three different data sources: individual interviews, recordings of planning meetings, and recordings of PDs. Triangulating these data supported our analysis of the approaches held by OSTE and the ways they enacted these approaches. These are described in Table 1.

Data included interviews in which OSTE shared their views on PD, planning meetings in which they designed PD, and recordings of PD in which they enacted their work enabled us to understand their approaches and tools.

Analysis

Analysis began with each member of the research team inductively coding (Creswell, 2013) interview transcripts into broad categories such as "tensions with school administrators" or "modelling as pedagogy" Rather than using a priori codes, we read across the transcripts and identified inductive codes by drawing conclusions about topics discussed by the OSTE. For example, the comment that "[teachers] will all say these are the things they believe, but actually being able to implement them is harder" (Kandice, Interview One) was coded as "challenge of the distance between conceptual change and action" since it was a statement of a teacher action that puzzled Kandice. Consistent with multiple case study methods (Yin, 2014) separated each OSTE's data at this stage to understand OSTE's beliefs in context.

After initial inductive coding, we compared initial codes, and we arrived at a rubric consisting of five thematic categories that included our inductive codes. The categories

Table 1. Data sources.

Data Source	Description	Frequency and Duration
Individual Semi-Structured Interviews Rubin and Rubin (2011)	• Interviews centred on three areas informed by the perspective of teachers as transformative intellectuals Aronowitz and Giroux (1987) and our RQs:(A) OSTE’s beliefs about teacher change, learning, and their epistemic beliefs (B) their comfort level and tools for supporting teachers, and (C) their understanding of their roles and teachers’ roles in their learning.	• Two per OSTE • Interviews were conducted by a postdoc after the first summer PD, at the beginning of the school year, and again at the end of the school year, just before the second summer. • All interviews lasted between 28 min and 56 minutes.
Planning Meeting Recordings	• Leading up to the second summer workshop, OSTE’s participated in PD planning sessions with university faculty, postdocs, and graduate students. • These meetings were audio- recorded and transcribed as evidence of OSTE’s decision making as they constructed PD.	• OSTE’s participated in five PD planning sessions conducted through Zoom video conference. • Planning meetings ranged in length from 59 min to 1 h, 23 min, and yielded 6 h, 10 min of audio-video recording.
PD Field Notes and Artefacts	• Field notes, teachers’ written work, slide-show presentations and audio-video recordings of workshop sessions were collected to document teacher educators’ actual practices with teachers. • In addition, OSTE’s artefacts from their own half-day workshops, including PowerPoints, photos of wall charts, and audio-video recordings were collected.	• Each OSTE submitted materials for their half-day workshops which contributed 4 h of content per OSTE, which yielded 12 h of audio-video recording.

were: (A) personal background and relevant experiences, (B) confidence as a teacher educator, (C) approach to teacher learning, (D) challenges as a teacher educator, and (E) design for teacher learning. Then, we evaluated the alignment between these categories and our research questions. Our first research question focused on OSTE’s approach to PD, which we found could be represented by categories A, B, and C. Our analysis of the relationship between OSTE’s backgrounds, their confidence, and their approaches reflected our sociocultural framing that the use of tools was connected to their depth of knowledge in solving cultural and social problems to meet their goals as OSTE’s (Vygotsky, 1978). Our second research question focused on practices for overcoming challenges and could be represented by categories D and E, since the challenges OSTE’s mentioned often suggested the type of tools they used to address those challenges. We applied this rubric to the transcripts of the interviews and the planning meetings, and using this data, we constructed individual case profiles of the OSTE’s according to the five rubric categories.

Then, we engaged in triangulation (Patton, 2002) of the categories by turning to the recordings and artefacts from PD to determine how these OSTE’s actions were aligned with the approaches suggested in their profiles. Yin (2013) has argued that data source triangulation is the method of triangulation “most likely to strengthen the validity of a case study” (Yin, 2013, p. 323). Here, this step also allowed us to determine the extent to which their actions were consistent with Giroux’s (2010) theory of teachers as intellectuals as we read the profiles and viewed the PD artefacts through this lens. For example, OSTE’s statements (e.g. “You’re not the captain, you’re rowing along with them”) and actions (e.g. engaging teachers in think-pair-share) were compared for alignment, and the profiles were revised accordingly. An example of this process for one OSTE, Tammi, is presented in Table 2.

Table 2. Analytic process example for One OSTE: Tammi.

Round 1: Inductive Codes	Round 2: Inductive Codes Combined into Rubric Categories	Round 3: Rubric Categories Combined into RQ-Driven Categories
• Seeking learning about science teaching • Seeking learning about teacher education • Questioning/doubting herself • Deferring to faculty members • Deferring to more experienced OSTE's • Epistemic belief that learning involves changing ideas • Working through resistance to change • Encouraging teachers to be confident • Frustration with school administrators' views • Avoiding rigid prescriptions for teaching • Encouraging teacher goal setting	(A) personal background and relevant experiences (B) confidence as a teacher educator (C) approach to teacher learning (D) challenges as a teacher educator (E) design for teacher learning	(RQ) 1: What approaches to supporting teacher learning do OSTE's employ? RQ 2: How do OSTE's address the challenges they face in supporting teacher learning?

After an inductive profile was constructed for all three OSTE cases, cross-case analysis (Yin, 2014) of the profiles was conducted. The purpose of cross-case analysis was to engage in preliminary analytical generalization about the approaches and tools used by individuals occupying the role of OSTE's. Yin (2013) has stated that cross-case synthesis is a “critical analytic step” (Yin, 2013, p. 328) for case study research to provide transferable analytic conclusions. The first round of cross-case analysis involved identifying common themes across OSTE's experiences, and identifying the shared and distinct contextual factors that informed their work. We initially reached agreement on four themes. In a second round of analysis, we actively sought disconfirming or contradictory evidence for our themes. At this stage, one theme was eliminated for being too specific to one case (i.e. Paul, who had retired from the state agency prior to the study had slightly different experiences than the other OSTE's). Thus, three cross-case themes that embedded the codes from the individual cases were identified. To ensure trustworthiness (Creswell, 2013), these themes were shared with the OSTE's through member checking conducted by the postdoc, again to minimize the possibility that OSTE's may not want to share negative feedback with faculty. All OSTE's agreed that the themes captured their experiences. OSTE's provided additional examples in support of the themes but did not suggest any additional themes.

Results

First, case profiles of each OSTE are provided. Each begins with an introduction to the OSTE and explains their conceptual and practical approaches to PD. Then, cross-case findings are presented.

OSTE Paul: introduction

Paul is a monolingual white man with 33 years teaching science at the K-12 level. His certification was in secondary science education, and he taught grades 6 through 12. Paul holds a master's degree in science education and had previously worked for the state education agency. He retired prior to this study.

Approach

Paul believes that when working with teachers, “you can *describe it*, but you don’t have to *prescribe it*.” (Interview Two). As an OSTE, Paul rejected the common idea of “selling” teachers on new ideas since he saw it as dishonestly impressing outside views. “I hate to use that term” (Interview One) he explained, acknowledging that teachers should make decisions for themselves as professionals and intellectuals (Giroux, 1985; 2018). He explained that teachers who want to argue against the SWH approach (Keys et al., 1999) are “the most fun, quite frankly” (Interview One) since they engage in productive negotiation. Repeatedly, he explained that teachers are “professionals,” and, “by and large we can overcome almost any resistance because you also have a room full of peers” (Interview One) in PD.

As an OSTE who was not officially a school or university employee, Paul rejected the need for formal titles. He explained, “I’m just [Paul]. The only thing I can do is fumble along and maybe we can work out something that makes a difference with your kids” (Interview Two). Paul’s disregard for power dynamics is an intentional part of his approach to conducting PD. In alignment with this view, Paul described questioning and inviting teachers to shift their practice rather than dictating what they should do. He explained his approach as:

It’s just, “did you ever think about doing something different? I know there’s a bunch of tools in the toolbox someplace. Do you want help unpacking or do you just want to leave them over there in a box? It’s up to you. It doesn’t matter to me because at the end of the day you’re going to do what you want when your door closes. So, don’t put on a performance. I opened the door. I’m not interested in you being a performer. I’m interested in you helping kids to learn. That’s my only interest”. (Interview One)

Paul made similar comments throughout interviews and PD about giving teachers a “challenge” to grow (Interview One) and observing how they respond.

Tools for overcoming challenges

Paul’s main tools were to position teachers as professionals, to model key practices, to follow-up consistently after PD, and to engage with the research team to gain new insights. First, Paul tended to create workshop settings consistent with his approach in which teachers could share solutions to problems together. For example, he began one session with a prompt for teachers to tell him: (A) the successes they have been having, (B), the challenges they have been having, and (C), the “fixes” to these challenges that they have already found (PD Field Notes). By asking teachers what “fixes” they had already made, Paul prompted them to begin with a professional, agentic mindset before they began new learning.

Paul also used modelling (Interview One) during PD. He explained that “All we can do is ... work through it together” (Interview Two). Accordingly, in PD, Paul modelled the

dialogic teaching practices that were consistent with SWH (Keys et al., 1999) as an approach to teacher learning. After workshops, Paul supported teachers' enactment of this approach by asking what content or standards they were working on via email. Through these invitations, he would ask what they would like support with, search for ideas and resources, and email his findings to them. In sharing this information, he tells teachers to "see if this fits" (Interview Two), putting the control back in their hands.

During planning meetings, Paul asked the research team how their data analysis could support his decision making around content. In this way, as an OSTE, he took a professional and intellectual stance for himself by engaging with research as a source of new insights. In one meeting, he asked the research team, "Is there anything that has come up on the different surveys that have gone out that we need to include in workshops?" (5.6.2020 Planning meeting). While Paul embraced research findings in planning meetings, when talking with teachers, Paul positioned himself as a cautious interpreter and sceptic. In one workshop, he included a slide about evidence from research, but as he presented it, he reminded teachers, "These are suggestions- not 'have dos.' It's your classroom. Run it that way" (PD Field Notes). In this way, Paul ensured that teachers did not see him as overly research focused.

OSTE Kandice: introduction

Kandice is a monolingual white woman with 8 years' experience teaching elementary and middle grades science. Kandice is certified as an elementary generalist with a middle school endorsement and holds a master's degree in curriculum, instruction and assessment. Kandice was employed by the state education agency during this study. Her role involved providing coaching in multiple districts across the state.

Approach

To Kandice, learning occurs when the conceptual changes in one's ideas are put into practice. Her approach to PD is rooted in "challenging the theoretical and belief systems [of teachers] and making them defend their position" (Interview One). Once teachers' belief systems shift, then she can push them to consider how new approaches may "look [like] in the classroom" (Interview One). Kandice felt this was best done in a supportive environment. On multiple occasions she explained that she likes her cluster of teachers to feel a sense of community (Interviews One & Two).

Kandice emphasized that science teachers need to understand the "content behind the standards" rather than simply knowing content (Interview Two). Consistent with the SWH approach (Keys et al., 1999), Kandice explained that she prioritizes experiences in which teachers can come to know the big ideas of science rather than worrying about their memorization of discrete information (Interview Two). In this way, Kandice described an approach consistent with teachers as intellectuals and problem-solvers (Giroux, 1985), rather than taking a banking approach that would emphasize teachers' retention of science content (Mosley Wetzel et al., 2017).

As an OSTE, Kandice's approach showed an awareness of her status as both an insider and outsider to the schools in which she supported teachers. She explained that teachers should not be prescribed strategies, i.e. — "we should or should not do that" (Interview Two). Instead, she emphasized the need to hold room for teachers to "puzzle out with

learners, just so they wrestle and, negotiate to this new realisation” of how their teaching could work in new ways (Interview Two). Consistent with Biesta (2017) Kandice’s approach reflected her awareness that she could not force teachers into conceptual change, yet she did have a role in pushing their thinking and practices.

Tools for overcoming challenges

Kandice’s tools for PD were to build structures for dialogue, to combine theory and practice, and to enlist practising teachers for support. To Kandice, PD should be designed to assist teachers to “free up space to learn” (Interview Two). According to Kandice, this is achieved by “building routine and structure” (Interview Two) and in ways that “support dialogic interactions” (5.13.2020 Planning Meeting). For example, in designing PD Kandice argued for the value of “moving into the breakout rooms with a set of questions she would use to generate the conversations” (6.3.2020 Planning meeting), but she noted that these would need to be used flexibly.

Consistent with her view that PD should be designed to both “challenge the belief systems of teachers” as well as support teachers in “putting [beliefs] into practice” in their classrooms (Interview Two), Kandice typically offered both types of questions in dialogue and in assessing her PDs’ success. On one exit ticket (PD Field Notes) she asked: (A) What was your biggest take away? And (B) What will you use on Monday? – the first question emphasizing big-picture conceptual learning, and the second emphasizing practical knowledge.

As an OSTE, Kandice saw the value of involving current practising teachers as workshop co-leaders. She explained that the teachers would need “help to facilitate or ask questions . . . someone to interact with to support [them]” (5.6.2020 Planning meeting) and pushed for teachers and OSTE to co-lead sessions. In this way, she built her own credibility with teachers by aligning her approach with theirs.

Kandice was unique in that she directly expressed that sometimes her tools did not match her stated approach, but these reflective moments were crucial to her work. She explained, “I need to be asking questions instead of telling. But it’s hard for me because my nature is to think that asking the questions is like time-wasting. But I know that’s how they learn. So that’s weird, huh?” (Interview Two). In this statement, Kandice showed self-awareness of the complexity of being an OSTE who views teachers as intellectual agents.

OSTE Tammi: introduction

Tammi is a monolingual white woman with over twenty years of K-12 teaching experience, specifically at the 5th grade level. Tammi had a wealth of K-12 classroom experience and a master’s degree, but she had only begun working at the state education agency one year before this study. Tammi explained that she and Kandice “are collaborating together” (Interview two) to provide her with support.

Approach

To Tammi, learning manifests itself in the same ways whether someone is an elementary student or an adult. She knows teachers are growing when “they have those ‘Aha’ moments and they can make connections with things in the past, or change their mind, or come up with ideas on their own” (Interview One). Tammi consistently described her

epistemic beliefs as being consistent with the SWH approach (Keys et al., 1999) presented in the workshops.

In her comments, Tammi also suggested that she was aware of her liminality as an OSTE, specifically referring to herself as “an outsider coming in” (Interview Two). She explained that she usually waited for teachers to ask her for ideas or support to encourage them to have “a sense of ownership”, and to “solidify that it’ll be okay” (Interview One). She explained that she often says things like, “take it for what it’s worth, you know, I’m not in your classroom, but would you be willing to try something?” (Interview Two). As she navigated the role of OSTE, Tammi was especially critical of school administrators who were focused on keeping activities consistent between classrooms, rather than recognizing that students’ background knowledge varies in relation to any topic. She explained,

You don’t have the same students and you don’t have the same teacher. It’s unrealistic ... They’re all going to have the same standards, but how you approach them is going to be different ... [Laughing] Otherwise put a robot in the classroom and let it happen. (Interview One)

By joking that administrators who prefer standardization may as well hire “robots,” Tammi showed her alignment with Giroux’s (1985) view of teachers as transformative intellectuals.

The tension between administrators’ views and the view of teaching presented in PD particularly challenging since many of the teachers in Tammi’s cluster were required to participate by their schools (Planning Meeting 4.23.2020). In acknowledgement of this, Tammi intentionally stepped back from becoming another voice dictating their practice (Interview Two).

Tools for overcoming challenges

Tammi’s tools for PD were to create room for dialogue while allowing for different logistical needs, to emphasize teacher goal setting, and to draw on her classroom knowledge to provide examples.

Tammi’s approach to working with teachers emphasized the value of dialogue, but she felt it was important to provide support in ways that met the logistical needs of teachers’ lives. In particular, she felt that synchronous sessions were key because it was essential for teachers to “get the same message at the front,” and then have time to “play” with those ideas (Planning Meeting, 4.23.2020). However, she intentionally scheduled workshops to fall over a weekend, so teachers could have a break (Planning Meeting 4.23.2020), provided asynchronous options (Planning Meeting 5.6.2020), and included 10-min breaks between sessions (Planning Meeting 5.13.2020).

Following the workshops, Tammi asked teachers in her cluster to write goals for the year on a shared GoogleDoc, and she explained, “I told them when I came in to do observations, those would be the things I would be looking for” (Interview One). When observing teachers and providing classroom feedback, Tammi often pointed out to teachers how much progress they’ve made towards these goals (Interview Two). She also explained that she tries to find people for teachers to collaborate with on their campuses, because she knows how vital this support can be (Interview Two). By putting teacher’s own goals in the middle of their work together, Tammi used her role as an OSTE to be supportive of their needs as professionals.

As a teacher and intellectual in her own right (Giroux, 1985), Tammi explained that she often thought back to what was challenging for her when deciding what areas teachers might need extra support. For instance, when she explained why she was encouraging teachers to adapt the SWH approach (Keys et al., 1999) to content area outside of science, she explained that “I found it easier personally for me when I was in the classroom using this approach, I switched that vocabulary . . . ” (PD Field Notes). In this way, even though she was no longer a practising teacher, Tammi established that she was familiar with classroom practice in hopes her suggestions would gain teachers’ approval.

Cross-case findings

Cross-case analysis led to three themes: (A) OSTE’s providing support while challenging teachers’ thinking, and (B) OSTE’s modelling practice to encourage pedagogical growth, and (C) OSTE’s managing their power in relationships with teachers and with faculty. Within each theme, we point out the ways OSTE’s approaches and tools enabled them to address challenges.

Providing support while challenging teachers’ thinking

An apparent tension existed between two competing understandings about teacher learning. On the one hand, OSTE’s reported the belief that teachers need to feel secure to have the courage to try new practices. As Aronowitz and Giroux (1987) have argued, the “disempowerment of teachers at all levels of education” has triggered a “crisis in creativity,” (p. 24). In this study, OSTE’s such as Paul described this need for empowerment by explaining that he “assures [teachers],” and, “helps teachers feel more confident” so they can try new methods. Relatedly, Tammi talked about valuing “baby steps” (Interview One) and encouraging teachers to notice their own growth to address this challenge.

Although they took the approach of ensuring teachers felt secure, the OSTE’s also felt that teachers sometimes needed to be “pushed” (Kandice; 5.6.2020 Planning Meeting) or “have their thinking challenged” (Paul; Interview Two). In these instances, OSTE’s noted that they recognized teachers as intellectual agents capable of utilizing critical feedback (Biesta, 2017). OSTE’s varied in how they accomplished this using the tool of dialogue. When addressing teachers’ concerns, Tammi and Kandice preferred to prepare questions to structure conversations in advance, whereas Paul typically made decisions in the moment by inviting teachers’ questions to drive the learning (PD Field Notes). Despite this variation, all three OSTE’s noted that for teachers’ understandings and practices to change, OSTE’s needed to pose alternatives. In sum, OSTE’s balanced teachers’ need for affirmation and empowerment with their need for challenge by leveraging the relationships they held with each teacher.

Modelling practices to encourage pedagogical growth

A persistent challenge for OSTE’s was ensuring that teachers enacted new pedagogies. To achieve this, OSTE’s modelled instructional options (e.g. Kandice, PD Field Notes) and co-taught in classrooms alongside teachers. They explained that they co-taught for two reasons: first, so teachers could envision how new practices might work, and second, to build teachers’ trust in them since they were not

current, practising teachers (Tammi, Interview Two). This approach maximized their positions as outsiders with new ideas, and as insiders who had credibility (Nigam et al., 2022).

When asked what specific pedagogical changes they hoped would result from their coaching, OSTE s often used the language of “implementing” the approach from PD, perhaps since this language was often used by university faculty (5.6.2020 Planning Meeting). However, when asked to elaborate what they meant, they described the need for teachers to adapt (Timperley, 2013) the instructional ideas promoted through PD to their own contexts (Paul, Interview Two). As Kandice explained, “The pivotal pieces are never really the practice pieces. The pivotal pieces are always the belief system pieces and the way they decide to use those practice pieces” (Interview One). When asked how they knew teachers were truly learning, all three explained that when they saw changes in practice, they felt they could make such a claim.

Managing their power in relationships with teachers and with faculty

Consistent with Giroux’s critique that reforms that reduce teachers to “doing the implementing” (Giroux, 1985, p. 378) ultimately cause more harm than good, OSTE s refused to prescribe particular lessons or teaching strategies. Paul was the most vocal about the importance of this action (Interviews One & Two), but all three OSTE s were careful not to impose their views on teachers. The goal of minimizing the potentially harmful relational dynamics was also evident between faculty and OSTE s in planning meetings. Just as OSTE s worked to empower teachers, faculty strategically ensured that the OSTE s were decision-makers as teacher educators.

An example occurred in the first planning meeting when one OSTE turned to faculty and asked, “What do you want to have happened during these sessions?” (4.23.2020 Planning Meeting). The faculty member resisted by saying “You’ve worked with me long enough. It’s sort of, ‘well we got an idea. Let’s see where it goes.’ Seriously.” (4.23.2020 Planning Meeting). In a later meeting, Kandice hesitated at an idea but said, “Well this is your . . . this is your show” (5.20.2020 Planning Meeting). Noticing her hesitancy, faculty reiterated the message that the planning space was a shared responsibility. Kandace later reflected that she was “grateful her voice was valued” (Interview Two) in planning because it provided a model for teaching by supporting others’ use of their agency.

Discussion

The goal of this research was to address two questions: What approaches to supporting teacher learning do OSTE s employ? And how do OSTE s address the challenges they face in supporting teacher learning? In this exploratory qualitative multiple case study, three OSTE s were more aligned in their approach to PD than they were in the specific tools they used to enact that approach. Namely, across data sources it was clear that OSTE s favoured a stance of collaboration with teachers in the PD they provided. However, each also stated that they intentionally chose moments and practices to “push” teachers’ thinking, suggesting they viewed teachers as intellectuals and agents (Biesta, 2017) rather than banking receptors (Freire, 1970) of knowledge. To take this complex approach, this required the use of dialogue, modelling, and co-teaching, which each OSTE enacted with slightly different amounts of planning and structure.

Notably, all three OSTE^s made statements aligned with the notion of teaching as the work of transformative intellectuals (Giroux, 1985, 2010). While they did not cite particular theorists in their articulations of their approaches, this is expected since OSTE^s by nature are not university-based scholars. Instead, OSTE^s expressed this philosophy without academic jargon. As hybrid insiders to both the school and university contexts, they tended to describe elevated approaches to teaching and learning in everyday, approachable language.

Recommendations for PD

OSTE^s are uniquely positioned to push teachers' ideas and their practices forward as individuals who hold hybrid insider-ness and outsider-ness (Nigam et al., 2022). Clearly, there are limitations to PD being provided by school-based employees who are unfamiliar with research trends and limited in their ability to conceptualize new possibilities (Coburn et al., 2008). At the same time, there exist limitations to PD being provided by university-based faculty who are distant from the realities of daily classroom practice and may provide PD that is overly theoretical. OSTE^s bridge this gap. As such, PD that utilizes OSTE^s, and research on its efficacy, is sorely needed.

When it came to the challenges faced by OSTE^s when enacting this approach, there was more variation than similarity between the three cases. It is possible that some approaches served similar needs but did so in different ways. For example, Tammi's practice of having teachers set ongoing goals may have served a similar function to Paul's use of teacher-centred resource gathering in follow-up emails even though these two practices appear different on the surface. Both actions enabled teachers to engage in continued learning and feel supported as professionals. Based on this research, it appears that a wide range of conceptual and practical tools may exist for OSTE^s to operationalize that are consistent with their approaches.

Recommendations for future research

First, we concur with Perry and Booth (2021) that the lack of attention to the preparation, experiences, and views of the providers of PD is a problematic gap in the field. This gap may suggest a devaluing of these individuals' contributions to teacher development. Further, the field's attention to the components of effective PD at the expense of attending to the epistemic beliefs driving the design and enactment of PD points to the dominance of transmission models of teaching (Mosley Wetzel et al., 2017). It is unlikely that PD rooted in views of teachers as objects of reform rather than epistemic agents will lead teachers towards creating the types of student-centred classrooms promoted by reforms (NGSS Lead States, 2013; NRC, 2012).

In this research, we have chosen the term OSTE (Levin & Rock, 2003) to emphasize that these individuals do more than "facilitate" PD and have an equal right to be considered teacher educators as university-based faculty. However, we concur with other scholars that PD providers have a unique and sometimes contradictory role that crosses traditional university-school boundaries (Murray & Male, 2005; Nigam et al., 2022; Perry & Booth, 2021).

In addition, this research suggests that PD providers may strengthen their own work by discussing the hybrid nature of their roles as insiders and outsiders with other teacher educators. In planning meetings, OSTE had to negotiate their reasons for suggesting particular structures and approaches, and through this process, may have come to deeper realizations for themselves. In particular, Kandice's admission that her tools do not always match her approach shows a deep level of reflexivity that may have emerged from the research process. Additionally, the support between Kandice and Tammi was noted by both, but not made fully visible to the research team. Understanding the ways OSTE mentor other OSTE into this role could reveal new ways to support teacher educators' work.

Limitations

As case study research, by design, this study is not intended to produce findings that are generalizable (Yin, 2014). We conducted this research in the context of science education in the U.S., and the conclusions we have drawn must be considered in this light. However, our cross-case findings lend themselves to preliminary analytic generalizations about the approaches and tools used by individuals occupying the role of OSTE which may be of use in further studies.

Conclusion

Findings suggest that OSTE can make a profound impact when partnering with university-based scholars around the view of teachers as transformative intellectuals (Giroux, 2010). OSTE are uniquely positioned to bring knowledge and understandings from research into teachers' classrooms, and to make the realities of classroom practice understood to researchers. By exploring the sources of the tensions that OSTE face, the field stands to learn more ways to manage such tensions to maximize overarching educational benefits for teachers and their students.

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Notes on contributors

Catherine Lammert, PhD, is an Assistant Professor in Literacy Teacher Education at Texas Tech University, USA. She is a former elementary and middle school teacher and reading interventionist. Her research focuses on the role of language in science, teacher adaptiveness, and teachers' decision making around the selection of texts for teaching.

Eric Antwi Akuoko, M.Phil., is a PhD candidate in Science Education and an M.A. candidate in Educational Measurement & Statistics at the University of Iowa, USA. Mr. Akuoko has more than a decade of K-12 science teaching/research experience in Ghana and USA. His research interests embody the study of the relationships between science teachers' epistemic beliefs about knowledge/learning and their implementation of classroom learning environments for knowledge development. Additionally, he studies validity and instrumentation for assessment in science education.

Jee Kyung Suh, PhD, is an Assistant Professor of Science Education at the University of Alabama. Her research addresses sustainable teacher development, adaptive teaching expertise, and epistemic orientation. With active National Science Foundation support, she has developed assessment tools for evaluating teacher knowledge and established comprehensive teacher profiles that highlight adaptive teaching expertise. Her publication record includes 4 book chapters, 17 peer-reviewed articles, and over 50 refereed conference papers.

Brian Hand, PhD, is a Distinguished Professor of Science Education at the University of Iowa, USA. He was a school teacher for 11 years before moving into academia. His research interests include understanding the fundamental sense of science literacy, the nature of learning environments and the utilization of epistemic tools for learning, and how we can promote teacher learning focused on generative learning environments.

Gavin W. Fulmer, PhD, is a Senior Research Scientist at NWEA. His research addresses the applications and implications of assessment principles in STEM education. He has published in *Assessment in Education*, *International Journal of Science Education*, and *Science Education*, among others. He is an Associate Editor for the *Journal of Research in Science Teaching*. Previous positions include the U.S. National Science Foundation, the University of Iowa, and the National Institute of Education Singapore.

ORCID

Catherine Lammert  <http://orcid.org/0000-0001-7356-0816>

Eric Antwi Akuoko  <http://orcid.org/0000-0001-9260-1708>

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