Gaining Insights into Community Engagement Efforts: Learning from Preservice STEM Educators

Amy G. Maples, Lynn L. Hodge, and Nick Kim
The Department of Theory and Practice in Teacher Education, The University of Tennessee

ABSTRACT

This study seeks to extend research in the field by exploring literature examining preservice teachers' perceptions of community engagement efforts. We then report findings from a thematic analysis of a survey conducted with teacher candidates at a university in the southeastern U.S. who took part in school- and community-based STEM events, and provide implications and suggestions for utilizing community engagement opportunities as a means of enriching preservice teachers' understandings of local school and community contexts.

Keywords: preservice teacher candidates, teacher education, teacher preparation, service-learning

GAINING INSIGHTS INTO COMMUNITY ENGAGEMENT EFFORTS: LEARNING FROM PRESERVICE STEM EDUCATORS

In the field of teacher education, there is much discussion around what constitutes effective preparation for preservice teachers. Scholars agree that school and community engagement that extends beyond university classrooms provides teacher candidates with substantive experiences that prepare them for teaching in K-12 classrooms. Research confirms the importance for preservice teachers to engage in clinical experiences that support them in building knowledge about and developing connections with students' families and communities (Tinkler et al., 2019; Warren et al., 2011; Zeichner et al., 2016). Findings indicate that new teachers who enter their classrooms with prior positive experiences engaging with local schools and communities are more likely to be better prepared for the profession (Zhang & Zeller, 2016). Preservice teachers often note that these experiences allow them to learn about K-12 students, their families, and communities in ways that inform how they might teach students (Tinkler & Tinkler, 2020). In addition to these positive outcomes for new teachers, scholars have found that community engagement leads to improved overall student success (Buchanan & Buchanan, 2017) as well as increased involvement from students' families (Warren et al., 2011).

Many teacher preparation programs strive to provide preservice teachers with community engagement opportunities through various types of teacher-family-community involvement experiences (Zeichner et al., 2016). These efforts can involve engaging preservice teachers in such experiences as interviewing community members or volunteering at local organizations (Barnes, 2017; Warren et al., 2011) and often rely on partnerships between universities, schools, and community organizations (Zeichner et al., 2016). Despite these efforts, researchers have continued to find that establishing relationships with students and families

remains a significant challenge for new teachers due to various institutional and interpersonal barriers (Baumgartner & Buchanan, 2010; Evans, 2013). As a result, scholars have inquired about ways in which engagement efforts can best be leveraged to support teachers in developing these connections.

Research in this area has sought to understand preservice teachers' perspectives on their community engagement experiences and how these experiences impact their views of teaching and K-12 students. There are, however, few studies addressing perspectives in the context of science, technology, engineering, and mathematics (STEM) education specifically. As former educators and current mentors who work closely with preservice teacher candidates in fields of STEM education, we wish to use this study to expand upon current research in order to gain insight into how school- and community-based STEM events can be used as a resource to enrich preservice teachers' understandings of communities, families, students, and schools. Thus, the present study seeks to continue and extend research in this field by gaining insight from current literature on community engagement efforts with preservice teachers, and to investigate preservice STEM teacher candidates' perceptions of community engagement events, focusing on two primary research questions:

1. What is the nature of preservice teachers' perceptions surrounding community engagement efforts in teacher education programs?
2. How can community engagement efforts promote preservice teachers' understandings and valuing of communities, families, schools, and students?

To address these inquiries, we first explore themes across the literature on preservice teachers' perceptions surrounding their experiences with community engagement efforts in teacher preparation programs. We then report results from a survey conducted with preservice teacher candidates at a university in the southeastern U.S. who took part in school- and community-based STEM events as part of their course requirements. Applying findings from current literature as well as our own study's results, we offer suggestions for utilizing community engagement opportunities as a means of enhancing preservice teachers' understandings of communities, schools, and students.

Community Engagement

In the context of teacher education, community engagement can be broadly defined as a form of experiential learning outside of a formal classroom context in which preservice teachers engage with the local communities of which their students are a part (Farnsworth, 2010). As a form of experiential learning, community engagement is considered within the scope of clinical experiences, authentic context learning experiences, and other forms of field-based service learning (Forrester, 2019). Scholars note that community-based engagement experiences expand beyond clinical experiences in that they provide preservice teachers with opportunities to engage with students in non-traditional settings, something not necessarily afforded by field placements (Tinkler et al., 2019). In addition, community engagement consistently offers a benefit for both the students and the community instead of providing an experience that primarily benefits one party, as is sometimes the case with such experiences as interning and volunteering (Lavery & Sandri, 2021), and relies on collaborative, reciprocal partnerships between teacher education institutions and the larger community (Forrester, 2019).

For the purpose of this study, we draw on Lavery and Sandri's (2021) definition of community engagement in a broad sense to encompass any activity based in the community—whether it be at a school or other community space—that involves a level of

engagement between preservice teachers, K-12 students, and community members for the purposes of benefiting all parties. We also apply D'Rozario et al.'s (2012) descriptions of community engagement as a service-learning component "that connects student teachers with the community as partners in the teaching and learning process" (p. 441), offering mutual learning opportunities that expand preservice teachers' understandings and appreciation of the roles of communities in students' learning. In this way, we view community engagement as one component of a larger, integrated learning experience.

Goals of Community Engagement

Tinkler and Tinkler (2020) posit that community engagement provides teacher candidates with an awareness and understanding of the community that supports them in forming relationships and increasing social capital, or resources that individuals accumulate as a result of experiences (Bourdieu, 1986). Scholars also highlight ways in which community engagement-focused approaches provide preservice teachers with opportunities to draw on the funds of knowledge students bring into the classroom from their families, homes, and communities when creating learning experiences (Barnes & Marlatt, 2022; Buchanan & Buchanan, 2017; Zeichner et al., 2016). Given these affordances, the overall purposes of community engagement are to connect preservice teachers' understandings of their roles and the happenings within their classrooms to the broader familial and community context (Haddix, 2015) and to provide a mutual learning opportunity "where the interaction between teachers and learners prompt growth in knowledge, insights and perspectives about the community they are working with" (D'Rozario et al., 2012, p. 444).

Goals of community engagement efforts can vary depending on the teacher preparation program with which they are associated. For example, some programs gear community engagement efforts toward exposing preservice teachers to diversity in the spaces in which they are teaching (Barnes, 2017; Tinkler et al., 2019; Weeks & Harbor, 2014), noting demographic differences between teachers and students and "the need for pedagogical approaches that address issues of equity, power, and justice" (Barnes & Marlatt, 2022, p. 4). For these purposes, efforts are often aimed at developing preservice teacher candidates' cultural awareness (Chang et al., 2011; Wilcoxen et al., 2021) and preparing them to challenge traditional power systems and inequities in teaching (Barnes & Marlatt, 2022; Zeichner et al., 2016).

Goals of community engagement can also center around building preservice teachers' understandings of local resources in the community and how these resources operate in conjunction with schools and families and connect to teaching and student learning (Wilcoxen et al., 2021). For example, as part of coursework, some programs require preservice teachers to research resources in their school communities and investigate ways in which these resources can be used as assets to contribute to family- and community-building (see e.g., Warren et al., 2011). Other programs require preservice teachers to interact with various community members from local organizations, businesses, or centers to learn about the community's resources and support systems (see e.g., Barnes, 2017; Warren et al., 2011; Wilcoxen et al., 2021).

Finally, community engagement experiences can be set up simply to provide teacher candidates with exposure to working with students and practicing their teaching skills. For example, Tinkler et al. (2019) described a community-based service-learning experience where teacher candidates visited community centers and provided students with academic tutoring, applying skills they were learning from a literacy methods course at their university. These types of experiences, similar to field-based clinical experiences,

allow preservice teachers to sharpen newly learned skills prior to transitioning into their own classrooms.

Preservice Teachers' Perceptions of Community Engagement Efforts

While specific goals of community engagement tend to vary according to programmatic goals and specific content areas, there is much to be learned from preservice teachers' perceptions about these types of efforts and how these perceptions should inform current and future community engagement efforts. Scholars have worked to understand preservice teachers' perspectives as programs seek to provide these opportunities in meaningful ways that best support preservice teachers in understanding the roles communities and families play in student learning. Below, we outline important findings from recent studies regarding preservice teachers' perceptions about community engagement efforts.

Developing Teaching Skills. Some researchers in the field have explored preservice teachers' views about the ways in which community engagement practices have impacted their learning in their respective fields of study, and findings indicate that preservice teachers view community engagement as a means of developing their teaching skills through firsthand experiences. For example, Tinkler et al. (2019) explored preservice teachers' perceptions of a service-learning experience during which participants applied their learning from a literacy methods course in community centers by providing weekly tutoring to middle- and high-school students. Throughout the service-learning experience, the preservice teacher candidates engaged with reflective prompts as a way to build connections between course content and what they were learning at their community sites. Analyses of questionnaires, reflection responses, and observation notes indicated that preservice teachers felt that the hands-on experience informed their disciplinary knowledge and skill development, provided insights into relationship-building, affirmed the importance of community engagement, and developed their understanding of students' identities, strengths, and motivations (Tinkler et al., 2019). In another study, though not conducted with preservice teachers, Ferreira (2007) analyzed the impacts of a university-school partnership program on graduate and advanced undergraduate students' content knowledge and teaching skills. Specifically, the program involved university students from STEM disciplines planning and facilitating summer camps for middle school students in the community, as well as working with teachers in their classrooms to teach STEM lessons. Through qualitative analyses of interview responses, the researchers learned that the university students felt that taking part in the program improved their content knowledge and understanding of STEM teaching practices.

Understanding Communities' Funds of Knowledge. Other studies seek to understand ways in which community engagement practices can be used to develop preservice teacher candidates' understandings of families' and communities' funds of knowledge and how these funds of knowledge can inform relationship-building and student learning. Using a comprehensive case study, for example, Tinkler and Tinkler (2020) studied the impact of a community-based service-learning initiative to focus preservice teachers' experiences on engaging with English learners through community partnerships. Through this case study, the researchers found that preservice teachers felt that they improved their understanding of the local community, developed community connections, and built social capital with the community members and partnering organizations. The preservice teachers concluded that, in turn, this social capital allowed them to better develop relationships

with students and support student learning. Similarly, Keller (2019) found that, after engaging in a science-focused service-learning project at a local community center, preservice teacher candidates reported an increased understanding of students' and community members' funds of knowledge and felt that this understanding contributed to their abilities to develop connections and relationships with students and communities.

In another study, Barnes and Marlatt (2022) analyzed pre- and post-survey responses from preservice teachers participating in a community engagement project and found that the teacher candidates' participation in the project led them to develop more nuanced understandings of communities and to better recognize the value of students' community memberships for supporting learning. In a similar study, Guzman et al. (2019) examined first-year preservice teacher candidates' reflective journals, interview data, and observation data to understand the impact of a service-learning community engagement experience developed from a university-community partnership. The experience involved preservice teacher candidates learning about and applying problem-based learning and immersion activities with students in partnering classrooms. Findings from this study suggested that the experience helped preservice teachers gain better familiarity with students' backgrounds and led to them feeling more prepared to enter the classroom. Buchanan and Buchanan (2017) contributed to similar inquiries through their implementation of a family-community engagement project that required preservice teacher candidates to engage with family or community members to obtain knowledge about the families or neighborhood that could be used to support classroom learning. Based on analyses of written reflections, the teacher candidates felt that the project enhanced their familiarity with students' families, the community, and their understandings of ways to incorporate classroom learning activities built around students' areas of interest.

Acknowledging Communities as Resources. Scholars have also been interested in learning how community engagement efforts build preservice teachers' knowledge of available resources and supports within the communities and how these supports relate to classroom contexts and student learning. Wilcoxen et al. (2021), for example, analyzed preservice teachers' perspectives regarding community immersion experiences that were embedded as part of university coursework. During these immersion experiences, teacher candidates toured and learned about the local community's organizations, vendors, and support centers and how these systems work in collaboration with the schools and families. After exploring the community through these *culture walks* and completing classroom immersion experiences in local schools, analyses of teacher candidates' questionnaire responses indicated that there were significant positive effects on the preservice teachers' confidence about teaching in the community and their perceived competency of teaching in culturally responsive ways. Particularly, teacher candidates noted that the engagement opportunities provided them with positive networking experiences and opportunities to create connections between students' communities and their learning in the classroom. Similarly, in Tinkler et al.'s (2019) study, preservice teacher candidates described how their experiences tutoring at community centers opened their eyes to the rich dynamics at play in the community and the ways community resources and the engagement across multiple domains support student learning experiences.

In another study, Lavery and Sandri (2021) sought to understand the impact of a community-based project designed to support preservice teachers in "gaining a deeper understanding of an issue, resource, or practice in their local community and to

consider how they might incorporate that knowledge into their teaching" (p. 10). Based on responses to pre- and post- questionnaires and written reflections, the researchers found that the preservice teachers felt the service-learning experiences gave them an increased sense of confidence, empathy, compassion, respect for others, initiative, and confidence to work outside their comfort zone (Lavery & Sandri, 2021). These studies and others have contributed to scholars' understandings of how community engagement efforts contribute to preservice teachers' knowledge of the reciprocal relationship between universities and communities.

CONCEPTUAL FRAMEWORK

Given these findings from current literature exploring preservice teachers' perceptions surrounding community engagement efforts, and in seeking to understand how these efforts can be used to develop preservice teachers' understandings of communities, families, schools, and students, we aimed to explore preservice teachers' dispositions surrounding the community engagement opportunities offered by our STEM engagement center within our university's teacher education program. To achieve this purpose, we grounded this study in the theory of situated learning (Lave & Wenger, 1991). The theory of situated learning posits that learning is supported through social interactions that allow learners to actively engage in practicing skills within authentic contexts (Lave, 2009; Lave & Wenger, 1991). In this way, learning is viewed as a situated activity where "learners inevitably participate in communities of practitioners and…the mastery of knowledge and skill requires newcomers to move toward full participation in the sociocultural practices of a community" (Lave & Wenger, 1991, p. 29).

Applying the theory of situated learning as a lens, we adopted a constructivist approach for interpreting this study's findings. Constructivism establishes that knowledge is constructed situationally and based on learners' individual and social experiences (Kumar, 2006). We selected this approach to guide our analysis given its qualitative and interpretivist nature (Creswell & Creswell, 2017).

METHOD

Participants

A total of 14 preservice teachers participated in this study. All participating preservice teachers were undergraduate students enrolled in an introduction to STEM teaching course at a large southeastern U.S. university in the spring semester during which this study took place. The overall objective of the course was to provide an introduction to STEM education for preservice teacher candidates interested in becoming STEM teachers, which involved connecting them with opportunities to take part in diverse teaching experiences. These experiences included but were not limited to middle school classroom observations, university-led engineering days, and family and community STEM nights. Following approval by the university's institutional review board, recruitment took place during and after several of the family and community STEM events.

Participating preservice teachers were eligible for recruitment in this study based on their attendance and participation in these family and community STEM events throughout the spring semester. Participants were sent an email following each event as well as at the conclusion of the spring semester, where they were provided with the link to the survey and invited to participate. In this way, participation was optional and made anonymous, and no email addresses were collected during the completion of the surveys. In efforts to protect participant anonymity, no demographic or other identifiable information was collected.

Data Collection Procedures

Surveys were developed by the authors and offered as an optional, anonymous way to provide feedback following each school- and community-based STEM event during the spring semester in which this study took place. These events primarily consisted of STEM nights led by local elementary schools in which community organizations and stakeholders—including our local STEM engagement center—took part. During these STEM nights, the preservice teachers attended and hosted stations that provided various hands-on STEM activities with which elementary students and their families could engage. The station activities were planned, created, and provided by leaders of the STEM engagement center but were carried out primarily by the preservice teacher candidates. In this way, the preservice teachers were supported in connecting their facilitation of the activities to the content they were learning in the introductory STEM teaching course. One particular event involved an open house in which community organizations were invited to share STEM related content through station rotations with students of all grade levels, but primarily included high school students and their families. For this event, the preservice teachers taking part in this study led a table where they engaged with high school students about their studies in STEM education at the university.

The surveys were designed to solicit the preservice teachers' perceptions around the importance of STEM community events in general as well as to seek out their ideas and feedback surrounding engagement at the event they attended. Specifically, the surveys were developed with the goal of understanding what preservice teachers value most about STEM education-focused community events, as well as their perceptions about the importance of these types of events. Surveys included open-ended questions to gather teacher candidates' feedback and responses, with one closed-ended question intended to understand their general agreement or disagreement about the importance of STEM community events.

Data Analysis

Given the qualitative nature of this study and its grounding in a constructivist approach, we chose to employ thematic analysis as a means of iteratively analyzing, interpreting, and categorizing the data (Braun & Clarke, 2006). Braun and Clarke (2006) define thematic analysis as "a method for identifying, analysing and reporting patterns (themes) within data" (p. 79). Applying Braun and Clarke's (2006) six-step process of thematic analysis, survey responses were first compiled and organized in a document, where responses were read and reread in order to become familiar with the data. Initial coding was then completed for responses to each survey question, using in vivo coding (Saldaña, 2013) to most closely capture preservice teachers' perspectives and seek out relevant responses for each code. We then engaged with the codes to identify consistent themes within the data across all survey responses. Themes were then reviewed, defined, and named. For the closed-ended survey question, data was simply categorized by response.

FINDINGS

Following a thematic analysis of all preservice teachers' survey responses, findings were grouped into two categories: themes related to logistical feedback about the event, and themes related to teacher candidates' perceptions of the importance of STEM community events.

Logistical Feedback

When preservice teachers were asked to provide feedback on how the STEM event could have been improved, there were two primary themes that were reflected from their responses: organization and preparation.

Organization

First, several preservice teachers indicated that more organization would have made their experience better at the event they attended. While most of these responses were not specific outside of indicating organization in a general sense, one participant specified that their event took on more of a "free-for-all stance" and stated that more organization with the students would have been helpful. Other participants named organization pertaining to working alongside the teachers and student volunteers at the school, with one specifying that "having the other teachers in the room know what we were planning on doing could help," and another stating that "more [student volunteers] at [the] table could possibly help" in creating smoother activities.

Preparation

The second theme within this category of responses was developed based on feedback related to preparation for the event. Specifically, teacher candidates indicated that "more direction," "being a little more prepared," and "some training" would have made their experience better at their event. Some participants gave feedback on preparation specific to their activity, such as having more materials with which to engage students and more specific directions on which types of questions to ask during activities.

Importance of STEM Community Events

Of the 14 preservice teachers who completed the survey, all but one responded *yes* when asked whether or not they considered school and community STEM events like the one they attended important, with one individual indicating *somewhat*. Open-ended questions asked the teacher candidates to describe what they felt was valuable and important about their particular event as well as about STEM education-focused community events in general. Responses to these questions centered around three primary themes: exposure to STEM, nontraditional learning, and student engagement.

Exposure to STEM

When asked why STEM community events are important, several preservice teachers noted that they felt the events were important for exposing students to STEM at a young age. In particular, they noted that introducing students to STEM fields and giving students opportunities to experience scientific thinking early in life are reasons why STEM-based community events are important. In addition, several teacher candidates mentioned their own lack of experiences with STEM in their youth as a reason they felt it important to expose children to STEM topics and fields at young ages. Specifically, one participant stated, "I feel like I missed out so to have [young students] introduced and experiencing and understanding engineering is so important because there are not these [kinds] of classes in every school."

Nontraditional Learning

Another salient theme noticed across several responses included discussions about the ways in which STEM community events allow for more authentic learning experiences outside of the classroom. Specifically, several teacher candidates felt the events helped demonstrate how STEM can be applied in the real world. One participant stated that community-based STEM events "can help students get some real world knowledge and also help them [figure] out what [interests] them more." Another participant said, "It's always good to bring learning outside the classroom and show the students how it applies in real life or in a fun activity." In addition, some participants considered this type of out-of-classroom learning to be an avenue for creativity and expressive, unrestricted thinking. One teacher candidate stated that community-based STEM events are important because they "let [young students]

express themselves in ways that may not always be accessible or possible in the traditional classroom setting." Another stated that these types of events "allow for students to create and think outside of their regular school environment—[which] leads to more creative thinking and being able to think freely without restriction."

Student Engagement

A third theme noticed across survey responses involved ideas surrounding ways in which community-based STEM events provide students with fun, interactive ways to learn about STEM. Some participants discussed the social advantages afforded by community STEM events, noting ways in which these events "allow students to learn new things with their friends and their parents" and provide "a fun way to be with friends [and] interact with [teachers]." Several mentioned ways in which these types of events provide students with interactive opportunities to learn and practice specific STEM-related concepts or skills. Others simply noted that STEM community events are fun for students, providing them with interesting and engaging learning experiences.

LEVERAGING COMMUNITY ENGAGEMENT EFFORTS: INSIGHTS GAINED

Our work in this field is informed by our desires to understand preservice teachers' perceptions of our current community engagement efforts for the purpose of furthering our own understanding of how to effectively utilize community engagement as a means of supporting preservice teachers' awareness and appreciation of local school and community contexts. With this goal informing our work, we used this study as an opportunity to combine other studies' findings with our own to compile suggestions for employing community engagement in ways that benefit all parties involved and reflect a stance of continuous learning and improvement. Applying both recent findings in this field as well as results from this study, we developed three suggestions regarding community engagement within the STEM education context.

Include Preservice Teachers on Planning Activities

Upon analyzing our participants' responses surrounding logistical feedback and ways the STEM events could be improved, it was noted that several teacher candidates felt that more preparation and more training in regard to student activities would have enhanced their experiences at the events. Also, some of our participants mentioned in their responses that having the teachers, student helpers, and teacher candidates working alongside each other and together on the activities would have created more organization and cohesion among all parties.

In a study by Weeks and Harbor (2014) exploring the impacts of a program centered on providing graduate students in STEM disciplines with experiences in K-12 learning settings, students reflected on the importance of organization and preparation in conducting lessons, noting ways in which the experiences of planning and executing lessons provided them with opportunities to practice and learn in real-life contexts. We gather from this study's results and our own teacher candidates' responses the importance of including preservice teachers in engaging with planning activities and events on a deeper level, and as such, envision applying such a structure within our community engagement efforts. We foresee this unfolding as a progression, where preservice teachers begin by participating in community engagement events, with their involvement deepening to creating and designing activities as part of the events. We discuss this trajectory further as part of our conclusion.

Focus on Reciprocity

Tinkler and Tinkler (2020) discuss in their study the need for reciprocal, sustainable relationships between community partners and university programs, highlighting the need for community partners to be the defining voices of the strategies and objectives central to community-based service-learning experiences. In another study, Chang et al. (2011) discuss the importance for preservice teachers "to work with K-12 students and their families and communities on a more equal footing and to perceive the students, families and community members not only as learners, but also as teachers" (p. 1079). These types of reciprocal relationships, the authors posit, contribute to teacher candidates' development of cultural awareness and competency.

Findings from our own study indicate that preservice teachers desire to experience a more cohesive model of participation in STEM community events. Based on our findings as well as the above studies' claims, we consider reciprocity alongside a greater need for partnerships to center a mutual relationship between community partners and teacher education programs in a way that provides space for all parties' voices. We feel it is important for teacher education programs to center efforts on opportunities that allow community partners to provide ongoing input and engage in mutual collaboration with programs. This turns attention toward the possibilities of including mentorship and guided practice as part of the collaborative efforts between schools and teacher education programs. Opportunities such as these could allow preservice teacher candidates to engage with members of the partnering community prior to the events.

Provide Opportunities for Reflection

Darling-Hammond et al. (2005) emphasize that critical, guided reflection is an essential part of clinical community-based experiences for preservice teachers. These authors state that without this necessary component, community-based experiences may inadvertently reinforce any preconceived assumptions about communities rather than support preservice teachers' appreciations of community diversity. Tinkler et al. (2019) demonstrate this in their study, using class time to engage preservice teachers in critical conversations to foster connections between the course content and the teachers' service-learning experiences at their community sites. Furthermore, Barnes and Marlatt (2022) recognized from their study analyzing teacher candidates' perceptions of a community engagement project that many teacher candidates maintained "othering" mentalities despite having engaged in the projects, and discuss the importance of engaging teacher candidates in discussions that provide them with opportunities to reflect on their positioning within communities and challenge preconceived assumptions that may contribute to othering mentalities.

These studies point to the need for teacher education programs to provide opportunities for critical reflection following and throughout community-based learning experiences. Given this learning on our part, we intend to develop critical reflection questions that include the following: *How did your community engagement experience impact how you think about students, parents, and their communities? What are some ways that we can engage more deeply with the community to support student/parent learning?* In this way, we can broaden the space for critical reflection for teacher education students to consider their experience from different focal points.

FUTURE STUDIES

Tinkler and Tinkler (2020) posit that solely limiting community engagement efforts to partnerships with K-12 schools can diminish the impact that other community stakeholders can have in developing and magnifying post-secondary educational

opportunities. The authors contend, instead, that community engagement efforts should span across the broader community, reaching beyond K-12 schools in order to engage the full complexity of the communities at hand. Future studies and projects in this area could add perspectives from various community members and other stakeholders in addition to those of preservice teachers to gain an understanding of how events such as school- and community-based STEM events contribute to preservice teachers' overall understanding of the school, community, family, and students. Opening up feedback and gaining insight from all involved parties would offer better insight into best practices for leveraging community engagement.

A study of this nature would also benefit by gathering data through other means that would allow for more in-depth responses. For example, focus groups and interviews with preservice teachers would provide richer opportunities for discussion that could provide further insight into participants' perceptions about community engagement efforts. These types of interactions could also provide better opportunities for teacher candidates to share feedback and ideas for future events.

CONCLUSION

A substantial body of research on teacher learning has focused on progressions that support preparation and induction into the profession (Furtak et al., 2012; Schneider & Plasman, 2011). Based on our experience with supporting preservice teacher education students through a host of in-course and out-of-course experiences, we propose that further research is needed in investigating a potential trajectory for learning about students, their communities, and pedagogical and communicative practices. We anticipate that such a trajectory would lean into community engagement experiences that are part and parcel of school and community life. This trajectory might begin with initial activities that enact specific activities during events in order to allow preservice teacher candidates an opportunity to interact with families. At a later point, these candidates might engage in the design of activities and the overall learning situation for students and parents. We contend that more research is needed to fully realize the potential of learning that stems from community engagement experiences.

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AUTHOR BIOGRAPHIES

Amy G. Maples, PhD
1122 Volunteer Blvd.
429 Claxton Education Building
Knoxville, TN 37996
(865) 974-2201
amaples8@utk.edu

Dr. Amy Maples is a post-doctoral research associate for the Center for Enhancing Education in Mathematics and Sciences at the University of Tennessee. Alongside this role, she serves as a program coordinator for the East Tennessee STEM Hub. Her research centers on a range of topics within fields of children's literature, teacher engagement, and elementary education.

Lynn L. Hodge, PhD
1126 Volunteer Boulevard
Knoxville, TN 37996
(865) 974-2532
lhodge4@utk.edu

Dr. Lynn Hodge is a professor of math education in the department of Theory and Practice in Teacher Education at the University of Tennessee. She is the director of the Center for Enhancing Education in Mathematics and Sciences as well as the director of the East Tennessee STEM Hub. Her research interests focus on community learning and teacher education.

Nick Kim, PhD
1122 Volunteer Blvd.
429 Claxton Education Building
Knoxville, TN 37996
(865) 974-9381
nkim2@utk.edu

Dr. Nick Kim graduated from the PhD program from the University of Tennessee in 2021. After graduation, he was a post-doctoral research associate and is now a research assistant professor at the University of Tennessee. He also currently serves as the assistant director of the East Tennessee STEM Hub and as a program coordinator for the Center of Enhancing Education in Mathematics and Sciences.

AUTHOR NOTE

Amy G. Maples https://orcid.org/0009-0001-9550-5225
Lynn L. Hodge https://orcid.org/0000-0002-5957-0863
Nick Kim https://orcid.org/0000-0002-6464-4046

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Correspondence concerning this article should be addressed to Amy Maples, The University of Tennessee, 429 Claxton Education Building, 1122 Volunteer Boulevard, Knoxville, TN 37996. Email: amaples8@utk.edu