

Work in Progress: Exploring Stakeholder Perspectives in Rural STEM Workforce Development

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Introduction.

In the 21st century, efforts to broaden participation in STEM have often focused on expanding access to careers and economic opportunities, particularly for populations that have been marginalized in STEM fields [1]-[3]. Recently, developing industries for AI and semiconductors have driven efforts to train the workforce for these future careers [1], [2], [4]. Implementing and advancing STEM workforce development (SWD) efforts requires partnership and collaboration among stakeholders across industries and sectors, including educational institutions at various levels, industry partners, and community partners.

While SWD is relevant to many contexts, rural SWD presents a unique context for focused study. The rural context is distinct and relevant for several reasons. Many recent national calls have emphasized the need for rural SWD, primarily focusing on improving economic outcomes in rural areas and being responsive to the industry workforce needs in rural areas [1], [5], [6]. Due to the localized nature of rural economies, workforce development (WFD) is frequently directly aligned with specific, highly specialized industries (e.g., agriculture, manufacturing, energy); as such, rural WFD is often structured around targeted efforts and collaboration to prepare the workforce for specific industries [7]. There are also many overlapping systems in rural areas that require collaboration spanning WFD efforts, including education and economic and community development [8], [9].

Additionally, rural students in education and workforce systems often face greater challenges than their non-rural peers pursuing STEM education. Often these barriers include limited resources allocated to rural schools that impact students' interest development and preparation for STEM education and careers or inequitable access to higher education due to geographic distance from higher education institutions and limited institutional engagement with rural communities [10]-[14]. Pursuing STEM careers often requires that rural students have to leave home, sometimes without the possibility to return, because of limited careers available locally, particularly careers that require bachelor's degrees [9], [13]. For many rural students, this situation is not desirable [15]-[17].

In order to further expand access to WFD for students in rural places, collaborations and partnerships between stakeholders like institutions of higher education, industry, and community partners are critical. Managing collaborations and partnerships across sectors can be challenging for a number of reasons related to navigating relationships and negotiating priorities between stakeholders, and even understanding how each stakeholder prioritizes the partnership itself. Therefore, the purpose of this work-in-progress paper is to explore stakeholders' perspectives on the collaborative nature of rural SWD, guided by the following research question: How do stakeholders conceptualize and describe collaboration in rural SWD?

Background Literature.

Research suggests that, despite the need for collaboration and alignment of priorities, the WFD system lacks integration, and stakeholders' goals often conflict [8]. Further, efforts are often framed through paradigms of SWD that focus on the pipeline metaphor [3]. The pipeline metaphor of SWD has been critiqued for being built and perpetuated on bad data or insufficient interpretations of data, being extractive, and prioritizing and perpetuating the "value" of certain STEM careers over others; for example, engineers versus engineering technicians [8], [18], [19].

This pipeline metaphor and perceived value of certain careers is particularly problematic in light of the accessibility of education and career pathways in rural areas. As previously stated, rural schools often have limited access to STEM education resources, which can impact rural students' preparation for pursuing postsecondary STEM degrees [10]-[14]. Notably, there is a common perception that to pursue postsecondary education and other careers, rural students must leave their home communities without the possibility of returning [9],[13]. However, many rural students often want to pursue their education and careers locally, which means seeking pathways available through community colleges and other technical training [15]-[17],[20]. These pathways are crucial elements of WFD efforts for many students and communities in the U.S. , despite perceptions that these pathways are not as desirable or lucrative as four-year degree pathways [8], [18], [19].

However, within engineering education, research specific to WFD is limited [4], especially as it relates to rural contexts and understanding the larger WFD ecosystems and collaborations [21]. Relevant literature in engineering education suggests that in collaborative contexts, there are often tensions in the collaboration driven by the overall context of the collaboration and priorities of each partner and the available resources, for example [21]. Additionally, these collaborative contexts often lead to unequal, but often equitable costs and benefits to each partner, which is often necessary in collaborative contexts [21].

Conceptual Framework.

To understand stakeholders' perspectives on collaboration in rural SWD, we draw on systems thinking and collaboration to inform our conceptual framework.

Systems Thinking.

There are many approaches to systems thinking that are grounded in different perspectives, traditions, and disciplines. For this study, the primary framing of systems thinking comes from Meadows [22]. Meadows defines systems thinking through characterizing a system as an interconnected set of elements that is coherently organized in a way that achieves a goal. Therefore, systems thinking is an approach to understand the behavior of a system over time, which is impacted by the relationships between elements and the rules that govern these relationships to achieve the function of the system. Meadows further defines systems traps and opportunities, and leverage points to change the system, related to information flows, balancing and reinforcing feedback loops, self-organization, and goals, to name a few.

Collaboration.

Our approach to understanding collaboration draws on literature about multistakeholder

partnerships in complex systems [23], [24]. Collaboration is described as “a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible” [23, p. 5]. Collaboration can be applied to many different problems and contexts, but is often classified as efforts to either resolve a conflict or advance a shared vision [23, p. 10] defines nine key characteristics of collaborative problems:

1. Problems are ill defined, or there is disagreement about how they should be defined.
2. Several stakeholders have a vested interest in the problems and are interdependent.
3. These stakeholders are not necessarily defined or organized in any systematic way.
4. There may be a disparity of power and/or resources for dealing with the problems among stakeholders.
5. Stakeholders may have different levels of expertise and different access to information about the problems.
6. The problems are often characterized by technical complexity and scientific uncertainty.
7. Differing perspectives on the problems often lead to adversarial relationships among the stakeholders.
8. Incremental or unilateral efforts to deal with the problems typically produce less than satisfactory solutions.
9. Existing processes for addressing the problems have proved insufficient and may even exacerbate them.

Given these characteristics of collaborative problems, this framework is particularly aligned with exploring and understanding issues related to collaboration in rural SWD systems and contexts.

Together, these frameworks for systems thinking and collaboration are particularly useful when used together for a more holistic approach to addressing the research question. In particular, these frameworks will help illuminate how different stakeholders describe the SWD system from their perspectives and experiences, shedding light on collaboration in this context. These theoretical frameworks guided the development of the data collection protocol and informed our analysis and interpretation of the data.

Methods.

This study is part of a larger pilot project, framed as a participatory Delphi study, focused on bringing together research and practice in real-world contexts, and informed by rural SWD stakeholders' expertise and perspectives [25]. The goal of this work-in-progress paper is to present preliminary findings from the first stage of data collection and analysis. We took a general qualitative approach to this preliminary analysis to answer the research question and emphasize the exploratory nature of this work-in-progress.

Sampling and Participants.

Participants for this study have been recruited through a combination of purposive and snowball sampling, initially through leveraging the network of the third author. Participants in this study were selected based on their specific roles and experiences in rural SWD, which they described in a screening survey prior to being invited to participate in an interview. The results of this work-in-progress paper are informed by data collected from six participants. These participants

represent a range of institution types and roles. Two participants (Cameron and Erin) are employed by R1 universities. Two participants (Drew and Frances) are also in higher education at a four-year degree-awarding institution. The last two (Avery and Bailey) represent the non-profit sphere. Participants pursue work in many regions and across many efforts in the U.S. related to research, policy, and practice in rural SWD, especially as they inform the development and implementation of these efforts. This information can be seen visually in Table 1 below. Recruitment for this study is ongoing.

Table 1: Interview participant characteristics.

Pseudonym	Institute Type	Role Type
Avery	Nonprofit	Researcher - policy-focused
Bailey	Nonprofit	Researcher - practice-focused
Cameron	R1 university	Faculty
Drew	4-year institution	Faculty
Erin	R1 university	Researcher - practice-focused
Frances	4-year institution	Administrative

Data Collection.

To collect data for this study, we conducted semi-structured interviews over Zoom, each lasting approximately one hour. During the interview, participants were asked to describe their experiences in rural SWD and their perspectives regarding rural SWD, particularly related to collaboration and examples of success and challenges. Some example questions from the protocol that guided the conversation include:

1. In your (current or past) role, what type of scenario related to rural STEM workforce development do you deal with (or are you most interested in)?
2. In this scenario, who are the different stakeholders you would interact with directly? Who else was involved?
3. What were some challenges you are experiencing/experienced in work?

At the end of the interviews, the recording was automatically transcribed by Zoom, cleaned, de-identified and subsequently stored in the third authors' Google Drive, with access shared with only the co-researchers. Participants received a \$25 gift card for their time. This study was reviewed and approved by the Institutional Review Board (IRB) at our institution.

Data Analysis.

Data analysis followed thematic analysis outlined by Braun and Clarke [26]. Each author completed an initial pass through the transcripts to familiarize themselves with the data before

using deductive codes derived from the systems thinking and collaboration framework. Examples of deductive codes from the systems thinking framework included Meadows' [22] system traps such as "tragedy of the commons", "rule beating", "success to the successful" as well as leverage points to change a system. Codes were also derived from the key characteristics of collaboration [23] such as "adversarial relationships", "insufficient solutions", and "problem complexity or uncertainty." During our first debriefing exercise, we found that some of the deductive codes were limiting our ability to capture participants' perspectives and complicating our understanding of the data. This resulted in the revision of the codebook and another round of coding in which we focused more on inductively coding the data, still informed by the frameworks but while making room for the emergence of new and unexpected perspectives. Some of the inductive codes that emerged include "perception of mobility", "funding shifts", "centrality of community colleges," among others. This was followed by the second coding cycle, during which we identified the categories and emergent themes from the data. We met as a team to discuss the themes we felt were most salient from our analyses to enrich our understanding of the patterns in the data. Though the goal of our debriefs was not to reach a definitive consensus but rather to build our collective understanding, the findings reported here reflect our agreement on the emergent, preliminary themes.

Positionality.

The first author identifies as a queer woman from a multiracial family and is often perceived as White. She is a first-year Ph.D. student in engineering education from a predominantly rural U.S. state. The author hopes to ground her research in equity-oriented approaches to engineering education and workforce development, particularly in rural contexts. She grew up in a population center within this state and recognizes that her educational and professional opportunities were shaped not only by place, but also by privilege, financial resources, and circumstance.

The second author identifies as an international student from West Africa, and is currently in the second year of her Ph.D. in engineering education. Her research interest revolves around broadening participation in STEM through the promotion of diversity and inclusive practices. Through her research, she questions systemic structures that impact persistence among underrepresented populations. She brings to this study her lived experiences both as a rurally-raised individual and as one who has worked with rural undergraduate students in engineering.

The third author is a White, queer engineering education professor from a rural region of the U.S. This author's research focuses on the systemic influences on the educational and career pathways of rural students and the influences on their communities. As such, this author scoped the larger project and was primarily responsible for collecting the interviews included in this study and guiding data analysis and reporting.

Results.

For the purposes of reporting our preliminary findings, we focus on three themes: Place-based Considerations Ensure Relevant Efforts, Importance of Leveraging Resources, and Partnerships and Collaborations Require Navigating Complexity. These themes and their interconnectedness is presented in Figure 1.

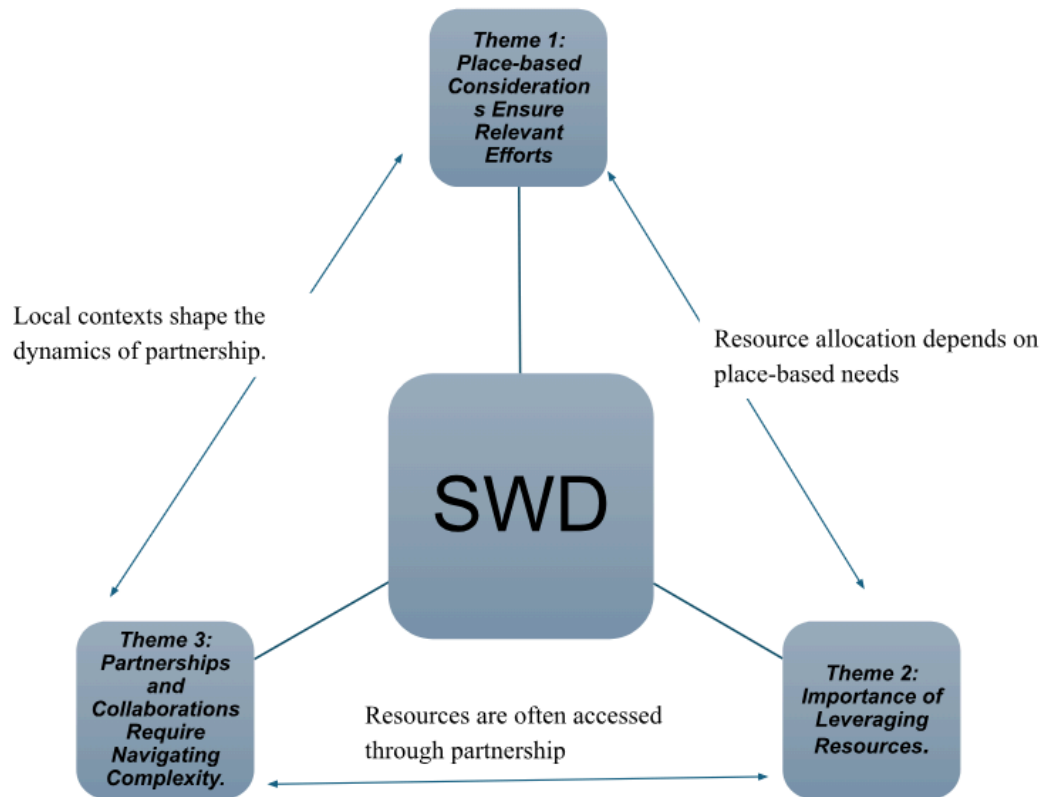


Figure 1: Emergent themes and their interrelationships.

Preliminary Theme 1: Place-based Considerations Ensure Relevant Efforts

This theme of place-based considerations describes the need for rural SWD to be responsive to place, or the contexts that shape how problems are experienced and how solutions are implemented in rural communities. Participants consistently emphasized that challenges in rural places are not the same as those in non-rural places and, therefore, should not be addressed in the same ways. Frances contrasted rural regions with Silicon Valley, explaining that rural areas are “not hurting in the same ways” and that efforts must focus on “keeping these areas vibrant” or “bringing back vibrancy” where opportunities have historically not been afforded. This perspective suggests that rural workforce development (WFD) must account for longstanding opportunity gaps and economic contexts that differ from challenges faced by urban areas.

Another participant expanded upon this idea, suggesting further from their experiences working with different partners that, in fact, policies and solutions that are relevant for non-rural places may be completely irrelevant for rural places. As Avery explained, those in rural colleges or state policy makers are often indifferent to “what happens in [a] large city.” According to them, it is simply not applicable to “a college of 900 people” serving a “150-mile radius catchment area.”

These examples suggest that because problems in rural places present differently, so too should the solutions. Drew described an effort intentionally aligned with a region’s existing industry,

explaining that an aerospace startup in a nearby city is “trying hard to get into these technical high schools and technical colleges to train people” to manufacture aircraft components and “develop programs...to get people tapped into being aircraft technicians... [and] doing the sort of aircraft manufacturing work that [the aerospace startup] need.” In this case, WFD is directly tied to a specific employer and regional economic need rather than a generalized training model.

Just as effective solution efforts are often specific to particular rural regions, approaches that succeed in one context may not do so in another. Avery compared two rural workforce partners’ efforts to illustrate this point. In one West North Central state, staff “go out to a different rural county about an hour away” and “move from place to place [to] offer training in a hybrid way” as “a way to get more coverage from one or two expert teachers or faculty.” However, Avery emphasized that this model depends on geographic proximity, given that a Mountain state partner “laughed at this idea,” explaining that they “would have to pay to move that person here” and could not expect faculty to drive “4 hours a day to get out to...different communities.” It is evident that what works in one rural region may be impractical in another.

These quotes demonstrate the need for rural SWD efforts to acknowledge the specific contexts of rural places, including the relevant industries, and frame efforts around these contexts. Notably, participants highlighted that not only are rural and nonrural places different, but also that rural places can be very different from each other.

Preliminary Theme 2: Importance of Leveraging Resources.

This theme of leveraging resources highlights challenges with resource access and mobilization in rural areas, while recognizing that different types of resources are required to achieve WFD goals. Participants emphasized that staffing is one of the most persistent constraints in rural STEM programming. As Avery explained:

“The biggest challenges [are related] to staffing. If you are trying to stand up a high-quality STEM program of any kind...it’s really hard to staff them, right? Say we have a shortage of respiratory therapists in our county. We’re a community college and we’re going to start a respiratory therapist program. How can you find, hire, and retain staff to operate that program? It is often impossible. I hear the word ‘impossible’ about this all the time. We see that a lot in healthcare [and] we see another version of that in training for local industries.”

They further described that in many cases, the pay for these staff roles is often not appealing and these programs may often require mobilizing staff and resources across large service areas, adding an additional challenge, particularly in regions like the Mountain West where communities may not be in relative proximity to each other. This type of resource disparity is one example of the many resource disparities rural communities experience, as previously described.

Beyond staffing, participants also pointed to funding as a critical resource for rural WFD efforts. As Frances stated directly in describing their program’s needs, “something that absolutely needs to happen is money. We need more money.” This comment reflects a broader concern also shared

by Avery, Cameron, and Erin: without sustained funding, rural WFD struggles to build and maintain necessary infrastructure. Participants described funding from many different sources, including federal grants for programs and research, philanthropic funders, and individual donations, all of which are important to create, implement, and sustain rural SWD. However, they were also acutely aware of how recent federal policies and actions have reshaped the funding landscape. Avery described these changes as “real huge losses of money,” explaining that institutions are now asking “how can we even stay open if we’re losing these funding streams?” For some colleges, the situation “feels existential,” not only in terms of lost program funding but also in basic operations, such as whether the Free Application for Federal Student Aid will “be processed on time” after staffing cuts at Federal Student Aid. Funding instability was therefore framed not simply as a programmatic challenge, but as a threat to institutional continuity.

Though the lack of funding is a significant, systemic challenge, participants identified other resources that can be leveraged to advance efforts, such as social and political capital. Bailey described how this type of capital can be important for leaders in rural SWD to push for efforts with the example of a college in a West South Central state “whose K-12 folks were pretty obstructionist.” As a result, the advisor “leaned on the employer side,” bringing “chamber people to the K-12 events...workforce people, [Workforce Investment Board], [and] employers because they needed to see a new way of doing things to help push on the superintendent,” since the President “didn’t feel like he was the point of leverage.” In this case, change depended more on relationships with employers and community partners than on formal authority within the institution.

Beyond influencing decision-making, participants also described relationships themselves as a resource in rural SWD. Related to political and social capital, information and relationship building can also be viewed as resources in rural SWD. Cameron emphasized the importance of approaching partners with humility and genuine curiosity, explaining that when speaking to partners, “very briefly, just like through an event, they appreciated that I wanted to learn.” They went on to explain that it seemed like others hadn’t taken this approach before. Framing their objective as being “on a fact finding mission ... to know [the partner’s] perspective”, adding that they “wouldn’t want to build something and then get their input later... that just seems like a waste of time.” Beyond influencing decision-making, relationships themselves emerged as a critical resource in rural SWD.

The quotes demonstrate the importance of resources, especially funding, and highlight different forms of sociopolitical capital as important resources. Participants described resources in rural SWD as both financial and relational. Many participants discussed social capital in the form of relationship building and information sharing, as well as recognizing capital through partners who have the time, capacity, and resources to achieve goals.

Preliminary Theme 3: Partnerships and Collaborations Require Navigating Complexity.

The theme of partnership and collaboration describes the intersection of priorities to inform relationships and how relationships guide rural SWD. This is related to power, perspective, and how stakeholders come together. These relationships are often complex, can serve different functions, and must be intentional. Avery explained that the “number one reason a county or

community college is implementing [different sources of] funding well is because the people in charge are friends,” and the “reason they are not implementing it at all, has to do with personal beef [conflict].” Avery described repeatedly asking, “Why don’t you use [Workforce Innovation and Opportunity Act]?” and being told, ““Oh, I hate so-and-so.’ It’s not professional, it’s personal beef [conflict].” While they noted that this dynamic can occur in cities, it tends to happen “at a high level, like between the mayor and the county attorney,” where “so many other people and layers” allow work to continue. In smaller places, however, “if one person does this and another does that, and they don’t get along, it just doesn’t happen.”

As Avery described above, these complicated interpersonal relationships can be more salient in smaller communities, where stakeholders are more likely to have established relationships outside their professional roles, which can either facilitate or hinder efforts. In addition to these relationship dynamics, partners must also navigate competing priorities across sectors. Bailey spoke of the “push and pull in politics” and the “back and forth with the [industry workforce] folks about what they need and what [the] frontline workforce is,” raising questions such as “can you skill up?” and “are you communicating clearly what you actually need?” College presidents, they explained, are “really wrestling” because they want to “upskill their local workforce so that all these folks aren’t priced out of their homes they have had for generations, but they can’t turn the programs around fast enough.” Communication about jobs, skills, and credential alignment is “very slow-moving...more than most places,” reflecting differences in urgency and institutional timelines that partnerships must manage.

In another example of the balance of priorities, Erin described how their perspectives and priorities are informed by their background, which they do not necessarily share with possible partners. As they explained, “some of the language that’s used is different,” so when partners are discussing priorities, Erin is “thinking about educational pedagogy,” and “it’s just not the same language.” As a result, it can be difficult to think through “How do we connect on even understanding what we’re both talking about?” This example suggests that collaboration depends not only on shared objectives but also on mutual understanding of language and approach.

Participants’ accounts indicate that rural SWD partnerships must navigate interpersonal dynamics, institutional timelines, and differences in language and perspective simultaneously. In smaller communities, where personal relationships may determine whether funding is implemented at all, conflict between stakeholders can stall action entirely. At the same time, colleges and industry partners operate on different timelines, with institutions “really wrestling” to upskill local workforces while communication about skills and credential alignment remains “very slow-moving.” Even when goals align, differences in language and framing can make it difficult to “connect on even understanding what we’re both talking about.” Although such challenges exist in many settings, participants suggested that they carry heightened consequences in rural contexts, where smaller networks and overlapping roles intensify both the complexity and the stakes of collaboration.

Discussion.

The purpose of this work-in-progress paper was to explore stakeholder perspectives on the collaborative nature of rural SWD. Through thematic analysis of interviews, preliminary themes were created around patterns in the data related to place-based considerations of rural SWD,

leveraging resources, and navigating complexity in partnership and collaboration. Together, these three themes reveal key insights about stakeholder perspectives on the collaborative nature of rural SWD, as well as other considerations for future research, policy, and practice.

Considering Rural Places in SWD.

As discussed by all participants, rural SWD efforts must be informed by the places where they are implemented, meaning that the needs, challenges, and solutions are responsive to the realities of specific rural communities. This is crucial for a few reasons, including but not limited to: 1) industry presence varies widely region-to-region and therefore the workforce development (WFD) needs will vary; 2) stakeholders across different regions will vary and will likely have different priorities and relationships with each other; and 3) availability of resources will vary by context. Because these factors can vary widely across rural areas, it is important that solutions presented for rural SWD are developed with this understanding. Participants' perspectives also highlighted that SWD contexts in rural areas differ from those in non-rural areas, and that rural areas themselves can vary widely. These findings echo literature that acknowledges the recognition needs and differences across rural educational and workforce contexts [7], [27].

Importantly, participants in this study discussed their understanding of place and their rural SWD often related to engagement with communities and stakeholders. Many participants in this study were either from a rural community or currently lived in one, and for many, this was the same community in which they were engaged in rural SWD. Despite their familiarity with rural places, many participants described intentional efforts to learn about their communities, engage with stakeholders, and build genuine relationships. These efforts are crucial to developing an understanding of place, as they allow meaningful relationships and a deeper understanding of the contexts in which we live and work. This is an important step in ensuring that our understanding of rural SWD is grounded in real rural places and working towards meaningful collaborative efforts (e.g., [28]).

Interconnections of Resources and Relationships to Rural SWD.

Although we described separate themes related to resources, partnerships, and collaboration, we recognize that these themes are interconnected within rural SWD contexts, as supported by participants' perspectives, and that this illuminates the larger system in which our participants operate and collaborate, as suggested by our conceptual framework [22]-[24]. For example, many participants described accessing resources through building relationships, such as information gained from engaging with stakeholders or political capital leveraged through different relationships to overcome barriers to pursuing SWD goals. Additionally, in some instances, relationships guided how resources were mobilized (or not), depending on interpersonal dynamics between stakeholders that created barriers to collaboration, or on community relationships with institutions that determined how community resources may be leveraged [23], [24].

Perhaps unsurprisingly, each participant discussed the importance of and need for funding to pursue rural SWD. Though participants mentioned various funding sources, including federal funding for programs and research, philanthropic funding, and private donations, the need for funding cannot be understated, especially in light of recent disruptions to many funding streams.

Funding offers an important connection to stakeholders, whether through partnerships on collective efforts or incentives to collaborate and participate. Funding also enables opportunities to engage in new and innovative programs, many of which are intentionally responsive to local contexts through meeting workforce needs and training.

Key Connections and Considerations for Success in Rural SWD.

Our preliminary analyses suggest a few key considerations for successful rural SWD efforts, which reiterate the findings. First, building relationships through partnerships and collaborations ensures relevance. As demonstrated by the participants, developing positive relationships with stakeholders in rural SWD is critical. In building these relationships, taking the time to learn about rural contexts and communities demonstrates a commitment to understanding the realities of rural communities. This relationship-building further ensures that efforts (e.g., outreach, programs) are relevant to the rural communities they serve [28]. We argue this relevance further reinforces relationships between stakeholders to continue to pursue meaningful rural SWD.

Second, resources in rural SWD contexts may need to be leveraged differently than in non-rural contexts. In some instances, this might mean mobilizing resources across space to reach more distant communities, where possible (e.g., mobile training programs), while also recognizing that there is no one-size-fits-all solution. Additionally, it is necessary to consider the role of social and political capital, as well as who holds power and influence in their communities [23], [24]. Information is also often a crucial resource that must be shared between stakeholders in different ways [22]. Identifying existing resources and challenges can help identify untapped resources that may need to be leveraged for success. In some instances, stakeholders may also be in the communities and may know better what resources can be leveraged and how.

Finally, community colleges are central to efforts in rural SWD. Participants in this study often worked with community colleges in different capacities and frequently emphasized the relevance and importance of community colleges in the rural SWD ecosystem. Community colleges are often more accessible to students and are better able to respond to the workforce needs of the communities they serve [14], [20]. As such, community colleges are vital to our understanding of WFD and should be looked to for examples of success.

Conclusions.

In this study, we applied the theories of systems thinking and collaboration to explore stakeholders' perceptions of rural SWD. Findings highlighted the importance of context in meeting the needs of rural workforce development, emphasizing the expectation that problems and solutions be tailored to the specific needs of the community being served, rather than a one-size-fits-all approach to addressing the identified problems or providing solutions. Additionally, the study emphasized access to both financial and human resources as key to the actualization of rural SWD objectives. This is especially crucial now that we are in an era marked by funding cuts and uncertainties. Finally, success in rural SWD was also found to depend on the collaborative relationships and partnerships among stakeholders, indicating the need for synergy between all relevant stakeholders in preparing rural talent for the STEM

workforce. Findings from this study could inform policies that support equitable allocation of resources for rural SWD, and serve as a guide for ongoing rural SWD efforts.

Limitations of the study include the small sample size of this work-in-progress, a shortfall that will be compensated for through continued recruitment. Additionally, this study is limited by the lack of diverse stakeholders' perspective including but not limited to those in community colleges and industry. Finally, the perspectives shared in the study are those of the six participants, hence, cannot be said to be representative of the opinion of the entire population of stakeholders in rural SWD. Future studies will expand on the preliminary findings highlighted in this study and also widen the scope of the study to capture more participants' perspectives.

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