Benefits of faculty participation in a research collaborative for rural STEM Educator Preparation Programs

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Teacher Preparation for Rural Teacher Persistence and Retention (TPR2)
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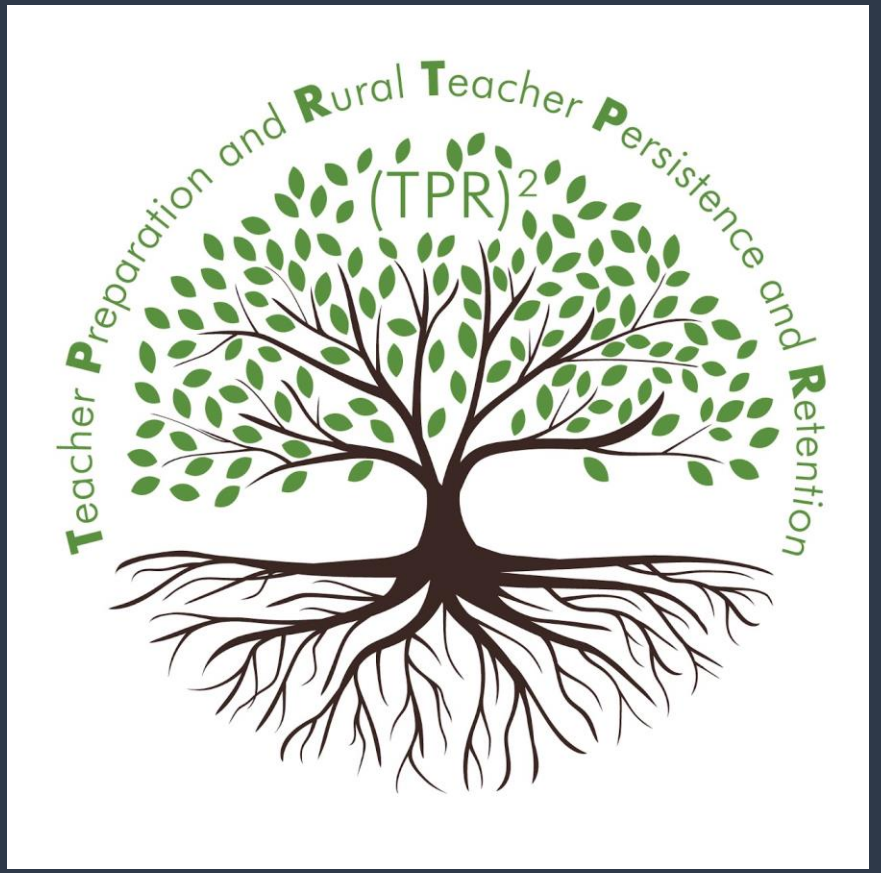
- https://sites.google.com/tamu.edu/tpr2/home

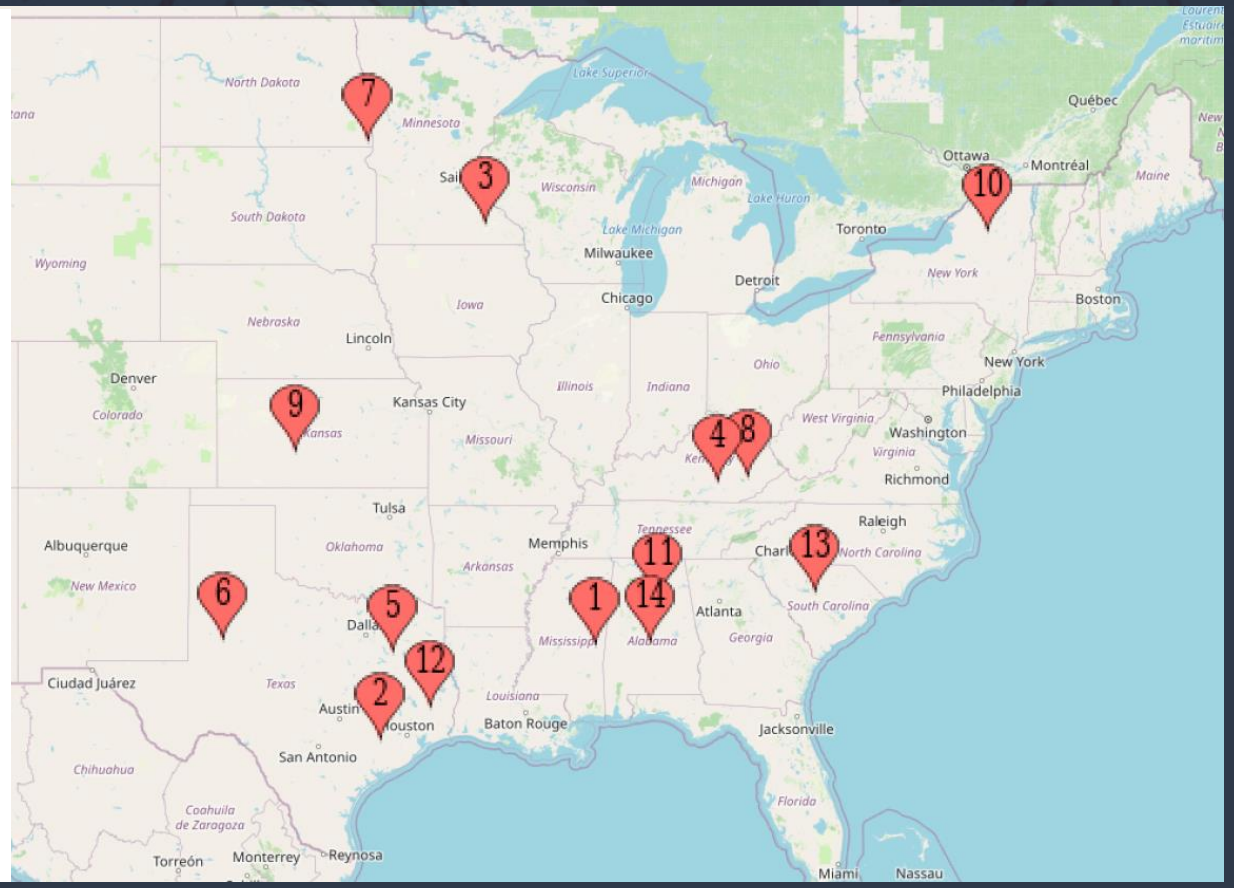


Premise of TPR2

- STEM and rural teacher staffing challenges for schools
- Specifics of teaching and learning in rural schools might lead new teachers to prefer suburban or urban teaching positions
- Teacher Preparation is often place neutral
- Explicit attention to place in teacher preparation might support new teachers in considering rural placements and build success so they persist in rural STEM teaching

TPR2 Collaborating institutions

1) Mississippi State University*
2) Texas A&M University – College Station*
3) University of Wisconsin-River Falls
4) University of Kentucky
5) Texas A&M University – Commerce
6) Texas Tech University
7) North Dakota State University
8) Morehead University
9) Fort Hays State University
10) Clarkson University
11) Alabama A&M University
12) Stephen F. Austin University*
13) Winthrop University
14) University of Alabama at Birmingham



TPR2 Project Goals

- To investigate the impact of EPP programmatic features on program completers' intention to teach, persistence, and retention.
- To engage in deep reflection leading to programmatic adjustments within collaborating partners' educator preparation programs.
- To share emerging knowledge about programmatic features of EPPs that support program completers' intention to teach, their employment decisions, and persistence and retention in rural schools.

About TPR2: Research Questions

1. How do rural serving EPPs address rurality? What features of EPPs are intended to prepare program completers for employment as a STEM teacher in rural schools?
2. What programmatic features of the EPPs impact teacher candidates' intentions to teach STEM in rural schools? How do these programmatic features impact the teacher candidates' intentions?
3. What programmatic features of the EPPs impact program completers' decisions to accept their first teaching position in rural STEM classrooms? How do these programmatic features impact the teacher candidates' decisions?
4. What programmatic features of the EPP impact program completers' decisions to persist in teaching STEM at the same rural campus? In what ways do these features impact the teacher candidate's decisions and long-term plans to persist at the same rural campus?
5. What impacts program completers' retention, that is, their decisions to keep teaching STEM in (a) rural or (b) non-rural schools, but not necessarily at the same campus? In what ways do these features impact the teacher candidate's decisions to remain teaching STEM in (a) rural or (b) non- rural schools?

EPP Data:

- Interviews with faculty and admin
- Syllabi
- Public facing documents (catalogs)

Program Completer Data:

- Teacher Intention Survey (last sem)
- First Year Teacher Survey
- Teacher Follow-Up Survey (second year)

14 Institution Collaboration

- Bimonthly (approx) whole team meetings (virtual) and in person Whole Team meeting (summers in coordination with Noyce Summit)
- Interviews/meetings with faculty and admins
- Collaboration on data analysis about program features
- Interviews with External Evaluator

Identifying EPP Features

- Defining what counts as a rural "feature"
- Created a grid for identifying and organizing evidence about rural:
  - Focus (e.g., rural institutional mission)
  - Recruiting and Incentives
  - Assignments (e.g., readings, community walks, challenging stereotypes, etc.)
  - Field experiences
  - Partnerships with rural K-12s
  - Other (e.g., faculty book study, program conveyance, etc.)
- Program Manager and Partner both complete grid for each EPP Pathway then meet to compare and discuss

Curriculum

Focus on how to teach in rural schools: Prepare teachers for rural classrooms, support in development of place-relevant instructional practices and to leverage local resources.

- Rural Field Experiences
- Place-based pedagogy
- Rural-focused readings and assignments
- Using technology to provide

Faculty that participate in the research embrace a dual role--

1. Participants are faculty and leaders working within rural STEM EPP's and researchers in the field in which they are working- STEM EPP's in rural areas
2. Their participation in the research component has also served as professional development for them through their experiences in collecting data, collaborating with other research and rural STEM EPP, opened up avenues for presentations and publications in rural focused outlets, and also created a community that can share information and challenge each other as faculty members to think outside of current practices within STEM rural EPP's

Study-within-a Study: What is the impact for faculty on the research team: Theoretical Framework and Methodology

- Social Experiences between faculty as co-PI's, participants, and also within current roles as STEM EPP faculty were expereintial (Dewey, 2007) and also "epistemic and social" (Duschl, 2008, p. 287) as a phenomenological event (Moustakas, 1994)
- Qualitative research methodology is appropriate to document sense making of participants within the shared phenomenon (Corbin & Strauss, 2015; Creswell, 2016; Moustakas, 1994) and grounded theory was used to analysis data sources (Glaser & Straus, 1967).

Data Sources

- Transcripts from co-PI/participant meetings and focus groups both online and in person from 2020-2023
- Transcripts from one-on-one meetings and interviews between co-PI/participants and project manager 2020-2023
- Observation Notes from Co-PI/participants
- Reflections from Co-Pi/participants

Data Analysis

- While data analysis is on-going as the project proceeds
- Some initial themes have emerged through open coding the current data sources

Theme 1-Co-Pi/Participants knowledge of rurality and its impact on STEM EPPs has increased, since the impact of rurality is not necessarily embedded into the coursework, structure, logistics, or theoretical framework of the STEM EPP.

Example:

- Very rural institutions such as North Dakota and Kansas have described rurality in terms of "groundwater", where rurality is built into the culture of everyone at the institution.
- Other institutions that serve a mix of teacher candidates may have to navigate a diverse perception of identity within the rural STEM EPP
- Faculty mentioned increased reflection on the idea of rurality within STEM pre-service teachers as a point of implicit or explicit bias depending on the identity of those STEM pre-service teachers, and how they can navigate in coursework and field experiences.

Theme 1- Examples

- “In the cultural competency course that we created for our Noyce scholars, we plan to be more explicit about rurality, and also realize that just the word "rural" is a loaded word. How are we all using it in the program? Do we leverage that word sometimes, how is it perceived by students and potential students/teachers.”
- “Now that I have an increased awareness, I am more likely to explicitly talk about more aspects of rurality with my students.”
- “I also realized there are so many different ways programs are preparing teachers for rural schools.”

Theme 1- Supporting Literature

- This theme is supported by other data which indicate that best practices in the classroom, recruiting and hiring and retaining teachers, preparing effective teachers, and building community may not be place neutral, but that addressing place and preparing teachers for rural places may mean adjusting educator preparation to better meet the needs of and leverage existing resources in rural schools and communities. (Azano, et al., 2020; Biddle & Azano, 2016; Johnson & Howley, 2015).

Theme 2- Participating in a research collaborative has served dual purpose as a professional learning community for the faculty as leaders within rural STEM EPPs.

Theme 2- Examples

- “Increased network of likeminded colleagues: researchers, leaders and other participants are very approachable, knowledgeable, and collegial.”
- “Interactions with other colleagues has impacted my professional identity as a teacher educator, my confidence discussing rural STEM educator preparation, and my understanding of program features affiliated with Rural STEM teacher preparation.”
- “This research collaborative has been eye opening and has created community while I have been participating in research with others, it has been an amazing experience.”

Key Quote

- I have grown a lot by being in the program. I have expanded my network in the field, and by doing so, I have a lot of different conversations now with others doing this work. There are many more places to disseminate research on this work that I was not aware of before, and some of our challenges are similar to others. Instead of staying in a bubble, I realize there is a whole network of educators I can research out to now and ask for support or share ideas.

Feedback from data analysis

- “this is one of those cases where just the fact that we're researching [place in our curriculum] is probably generating change”
- “We realize that we take place into consideration, but that we have not been explicit about what place means or how it might be categorized to help students make some distinctions that we have not been facilitating in the past.”
- “TPR2 has informed and enriched dialog about place in [our] TPP.”

Theme 2- Supporting Literature

- This creation of community and building of faculty relationships is also supported by research about communities of practice within faculty development environments and often must have unique characteristics to specifically support faculty in rural areas, (Howley & Howley, 2005; Sherer, Shea & Kristensen, 2003).

Significance

- Faculty in rural STEM EPP's are often in high pressure and isolated circumstances--"publish or perish", only one who specializes in that area, lack of time due to increased need for resources in rural and remote areas.
- At smaller teaching focused institutions, faculty may have fewer resources, colleagues and heavy teaching and service requirements.

Conclusion

- Biddle & Azano stated, “Advocacy for the importance of rural within education is not enough—researchers must find the intersection of rural realities with diverse sociospatial realities in the context of 21st-century globalization.” (Biddle & Azano, 2016 p. 317).
- TPR2 has provided funding, time and more importantly a community of rural STEM EPP researchers who are creating a network to better prepare effective rural STEM teachers.