Some rural education data points

- In Montana, 75% of K-12 schools are rural, the highest proportion among U.S. states.
- Montana has more one-room schoolhouses than any other state.
- In many rural districts, one educator teaches MANY classes, often multi-grade (plus they coach sports and lead extracurriculars...and maybe drive the bus, make school lunches, etc.)
- For 85% of rural elementary school children, their daily one-way bus ride exceeds the recommended time of 30 minutes*. Children from higher-poverty rural schools experience more mileage on unpaved roads and over mountainous terrain.

*Bus ride research reflects national demographics but is not specific to Montana

Why should we use our research impact opportunities to support rural youth and communities?

- Youth in rural communities have fewer opportunities for high-quality STEM learning than their peers in urban and suburban areas. (classes, school extracurriculars, out-of-school time opportunities, etc.)
- A statewide teaching shortage has exacerbated existing conditions; the more rural the school, the more difficult the challenge.
- Rural people who pursue STEM education have limited opportunities to pursue relevant careers in their home communities and often must leave home to establish a new career.
- Prolonged impacts of the COVID-19 pandemic have further amplified social, educational and health inequities in rural communities.
- Challenges can loom larger for girls and women; minorities; people with disabilities or special needs; people without a lot of money; and First Generation college students.

Montana educator needs assessment

Montana educators are eager to expand their skills through professional development (PD); however, high-quality PD is not always readily available, particularly in rural areas.

Biggest barriers to PD participation are:

- Availability of substitute teachers
- Having to pay out of pocket to attend
- Not enough time off from work

Teachers want to connect with university researchers!

- 81% of teachers (all subjects, all grades) are interested in resources related to university research
- Top need: Researchers travel to their school to interact directly with students (especially important for rural educators)
- Most teachers said they were interested in having access to contemporary data sets used by researchers

Most useful formats:

- Curated lessons plans providing examples of how the data sets can be used and how they align with Montana standards
- Examples of how data sets can be used to tackle real-world issues
- Professional development designed to stimulate how data sets can be used in the classroom

Quotes from teachers

- “Rural focused information would be nice. We often attend workshops where our needs are significantly different than those science teachers who teach only one discipline.”
- “Planning for a substitute is typically done on our own time and takes far longer than the actual lesson.”
- “Most teachers do not want to use personal days to take time off school to attend PD.”
- “I do not have a car for traveling beyond my town. I do not have funds …for purchasing equipment.”

Other

- Teachers who participate in MSU programs would like to present about them at their own professional conferences but don’t have funds to travel/register
- Teachers also need financial support to interact with their professional associations
Montana STEM Summits 2022² and 2019³

Key challenges and barriers (2019)
- Transportation
- Lack of industry-education connections
- Need for more statewide coordination
- Insufficient funding, staff and other resources

Key challenges and barriers (2022)
- Rebounding from COVID-19
- Changing demographics in Montana
- Misperceptions of STEM
- Insufficient funding, staffing and other resources

Montana STEM Summit: Gaps

Some gaps identified (2022) included:
We need…
- To better serve Native American students and communities
- To include more parents, teachers, administrators, and retired individuals who want to support in-school and out-of-school-time programming
- More ways to relate STEM to the natural environment, especially with Montana’s access to natural resources and the outdoors
- More opportunities to include art in STEM to make STEAM
- Ways to help others recognize the importance of STEM
- Time: Students are interested in STEM, but there is often not enough time in the school day
- To help educators who recognize the importance of STEM but sometimes don’t know how to get started.

Montana STEM Summits: Dreaming Big

What do STEM educators wish for?
- More staff and more pay for staff
- Paid Professional Development (PD) for staff; more time for PD
- Resources, kits, materials
- Work with people in the community to provide more programming
- Extra funds to create workshops for parents/educators to learn firsthand the value of STEAM education.
- Add additional STEM courses for younger students
- More specialty courses for K-12 students
- More programs for Indigenous students
- Statewide list of resources for funding and mentors
- Connect STEM and Agriculture
- Connect STEM education/outreach to potential careers

What next? (Grant-writing tips for researchers)
- Be creative with your partnerships: Extension agents and research stations; libraries; small town businesses (bank? Funeral home? Ag implement store?); agencies with a presence in rural areas (Forest Service, BLM, Fish Wildlife Parks etc.)
- Be as specific as possible — name the school, organization or partner
- Ask your partner(s) what THEY need. How does it dovetail with what you can offer? Make sure your budget reflects what you say you will do.


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