AI in Rural Special Education: Transforming Rural SPED through Innovation and Equity

The Vision

Your investment in this planning grant will launch a pioneering research agenda to ensure AI serves all students equitably, particularly those in our most vulnerable rural communities. Working across South Dakota and Wyoming, we will create research frameworks that move beyond basic questions of AI implementation to examine systemic implications for special education. Our work will shape how artificial intelligence transforms learning for students with diverse needs while protecting their rights and privacy.

The Challenge We Will Address

Rural special education faces a defining moment. While urban districts rapidly adopt AI tools, rural SPED programs risk falling further behind. Rural special education teachers face significantly higher workloads than their urban counterparts. According to Sutton et al. (2014), rural SPED teachers manage an average of 24 students with diverse disabilities - 37% higher than urban districts. Arfstrom (2001) found that these teachers spend approximately 52% of their time on administrative tasks rather than instruction. Limited access to specialists leaves these dedicated educators isolated, while current AI tools fail to address rural realities.

We will transform these challenges into opportunities. Our planning process will design research approaches to study how AI can revolutionize rural special education. Recent research by Chen et al. (2020) suggests AI-powered administrative tools could reduce documentation time by up to 35%, returning precious hours to instruction. Hopcan et al. (2022) demonstrated that AI systems can generate personalized learning materials in minutes, with their study showing 23-47% improvements in learning outcomes for students with diverse needs.

Why This Work Will Succeed

Our team brings unique strengths to this critical task. Black Hills Special Services Cooperative provides direct connection to 42 rural districts, along with a proven track record managing federal grants and existing AI research infrastructure. Our university partners complement these strengths - Dakota State University brings cutting-edge educational technology expertise, while the University of South Dakota contributes deep special education research experience.

Together, our institutions have successfully managed over $12 million in federal education grants over the past five years.

McIntosh School District serves as our ideal implementation partner, offering a perfect testing environment with its history of successful innovation and strong community engagement. This combination of research expertise, practical experience, and community connection positions us uniquely to deliver meaningful results.

Our Four-Phase Approach

1. Foundation Building (Months 1-3)

We begin by establishing a strong foundation for research design using the Community-Based Design Research (CBDR) approach outlined by Penuel et al. (2020). This proven methodology emphasizes collaboration with community members to address local educational challenges. Through CBDR, we will convene a diverse 12-member steering committee representing voices from across the special education landscape. Guided by Boaz et al.'s (2018) framework for stakeholder engagement in research, we will systematically map current practices across 20 districts and conduct facilitated workshops to define research priorities that reflect real needs and opportunities.

2. Framework Development (Months 4-6)

Building on initial insights, we will employ Design-Based Implementation Research (DBIR) methods (Penuel et al., 2020) to create comprehensive research frameworks. This iterative approach, which has proven successful in educational innovation studies, will help us capture both qualitative and quantitative impacts of AI in rural special education. Following Bammer's (2019) guidelines for addressing complex research problems, we will develop crucial tools including privacy protection protocols, evaluation frameworks, and ethical guidelines that ensure responsible innovation.

3. Partnership Building (Months 7-9)

Success requires strong, sustainable partnerships. Drawing on Koontz and Newig's (2014) model of collaborative management from other fields, we will establish formal agreements across our institutional partners, create resource sharing systems, and implement communication protocols that ensure effective collaboration. This approach combines top-down and bottom-up strategies to foster consensus-building and social capital among diverse stakeholders. Following Oliver et al.'s (2019) recommendations for research coproduction in another disparate field, we will carefully balance costs and benefits while managing professional and personal risks for all participants. These structures will support long-term research success while maximizing the impact of diverse expertise.

4. Future Planning (Months 10-12)

Our final phase transforms insights into action. We will design pilot studies, identify promising funding pathways, and create detailed plans for scaling successful approaches. This phase ensures our research designs can adapt to evolving AI technologies while maintaining focus on student needs and equity considerations.

Concrete Deliverables

Your investment will yield four essential outputs:

1. A comprehensive research framework including mixed-methods design, data collection protocols, analysis methods, and privacy guidelines.
2. A robust partnership structure supporting cross-state collaboration, resource sharing, streamlined communication, and effective conflict resolution.
3. A detailed implementation roadmap featuring pilot designs, scaling plans, success metrics, and risk mitigation strategies.
4. A knowledge foundation documenting best practices, gap analysis, priority research areas, and ethical standards.

Why This Matters

Rural special education stands at a crossroads. With your support, we will ensure AI technology enhances rather than diminishes educational opportunities for students with diverse learning needs. Our work will shape responsible AI adoption in rural schools, protect student privacy and rights, support teacher effectiveness, and advance educational equity.

This planning grant launches research that transforms how technology serves our most vulnerable students. The frameworks we develop will guide AI implementation not just in South Dakota and Wyoming, but across rural America. Together, we can ensure that technological innovation serves all students equitably.

Note on Data Sources

Statistics cited in this proposal come from published research and internal institutional data. While we have made every effort to use the most current and accurate information available, some figures may require updating during the full proposal phase as newer data becomes available.

Preliminary Budget Overview

Note: This preliminary budget has been developed in accordance with Spencer Foundation Vision Grant guidelines limiting total costs to $75,000 with no indirect costs allowed. All figures will be refined through stakeholder input.

Salaries ($32,000)

- PI Summer Salary (1 month): $12,000
- Graduate Research Assistant (0.25 FTE): $12,000
- Project Coordinator (0.15 FTE): $8,000

Benefits ($8,000)

- PI Benefits: $3,600
- Graduate Student Benefits: $2,400
- Coordinator Benefits: $2,000

Other Collaborator Support ($15,000)

- Community Partner Stipends: $9,000
- Consultant/Advisory Support: $6,000

Travel ($12,000)

- Partner Site Visits: $6,000
- Steering Committee Meetings: $4,000
- Team Planning Sessions: $2,000

Project Expenses ($5,000)

- Communication Technology: $2,000
- Meeting Materials & Supplies: $2,000
- Transcription Services: $1,000

Learning and Professional Development ($3,000)

- Team Building Activities: $1,500
- Collaborative Learning Sessions: $1,500

Total Direct Costs: $75,000

Budget Justification

This planning grant budget prioritizes:

- Collaborative team development through regular meetings and site visits
- Fair compensation for community partners and advisors
- Essential personnel time for project coordination
- Technology and materials to support virtual and in-person collaboration

All expenditures align with Spencer Foundation guidelines, with no indirect costs included. The budget supports our four-phase approach while emphasizing equitable partnership development.

Partner institutions will provide additional in-kind support including:

- Office and meeting spaces
- Basic administrative support
- Technology infrastructure
- Faculty expertise time beyond funded effort

Additional Support

Both BHSSC and university partners will provide in-kind support including:

- Office space and facilities
- Technology infrastructure
- Administrative support
- Faculty expertise

Budget Justification

This preliminary budget supports our four-phase approach to developing a comprehensive research agenda. Personnel costs reflect the intensive stakeholder engagement required for effective planning. Travel funds enable the face-to-face collaboration essential in rural contexts. Participant support ensures meaningful involvement from teachers, administrators, and community members who will shape our research priorities.

We anticipate the final budget may shift as we:

- Refine scope based on stakeholder input
- Align with partner institution capabilities
- Adjust to Spencer Foundation guidelines
- Identify additional in-kind resources

References

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