



ECR Hub
EDU Core Research



Preparing YOUR ECR: BCSER IID One-Page Project Summary

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Meet the Presenters



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Erin Lynch, EdD CRA, President, Quality Education for Minorities Network will facilitate a breakout room later in the meeting.



Session Goals

Purpose: Work with prospective ECR:BCSER IID grantees to create a one-page summary that **aligns with the goals and key components** of the EDC:BCSER IID program, which **provides opportunities for building the investigators capacity** to conduct STEM education research.

Driving Questions:

1. How do you tailor **your project idea** to develop capacity for STEM Education Research?
2. How do you craft a **one-page project description** that articulates the various aspects of the ECR:BCSER IID solicitation (Area of Interest, Mentoring Structure, Self-Assessment and Professional Development plan)?
3. How do you **share your project idea** to solicit useful and implementable feedback to revise your project idea?



Workshop Organization



Part 1: Developing YOUR Idea for an ECR:BCSER IID Research Project



Part 2: Crafting Your One-Page ECR:BCSER IID Research Project Summary



Part 3: Sharing your ECR:BCSER IID Project Summary to gain insight and feedback to refine your project idea and project summary





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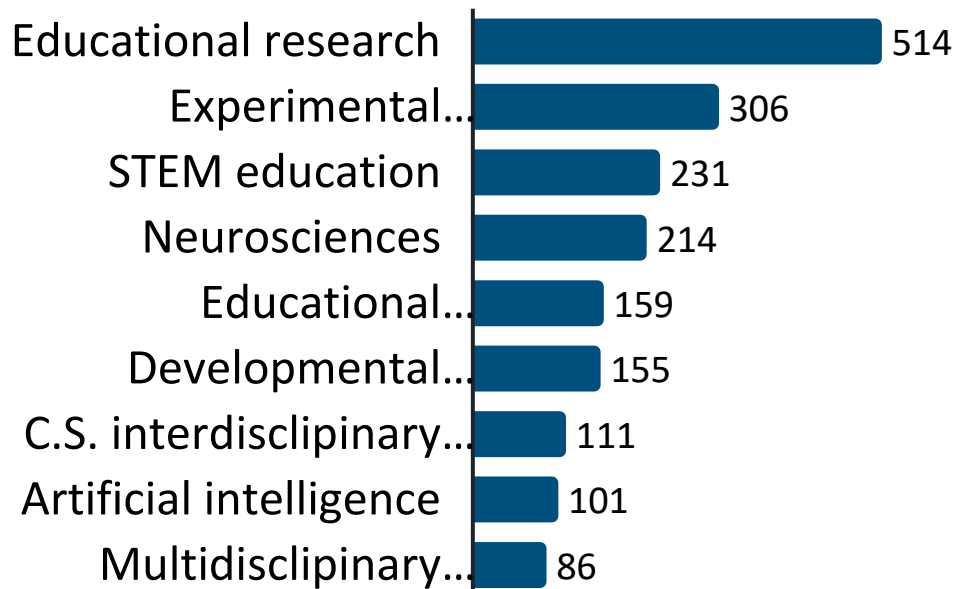
Overview of the ECR Hub



ECR Explicitly Aims To Be Multidisciplinary

ECR seeks to fund “investigators representing a broad range of disciplinary backgrounds and approaches, including those from fields more typically associated with other NSF directorates and offices.”

Number of ECR Publications



Overarching Goals and Target Audiences for ECR Hub

Two overarching goals:

- Extend the influence and reach of existing ECR investments
- Build career development opportunities, especially for underrepresented institutions and scholars

Three target audiences:

- Current ECR grantees
- Prospective ECR grantees (Broadening Participation)
- Stakeholders in other NSF EDU programs (reached via other NSF EDU resource hubs)



ECR:BCSER Program Description

ECR: BCSEER supports three types of projects designed to build investigators' capacity to carry out high-quality STEM education research.

- I. The Individual Investigator Development in STEM Education Research track (ECR: BCSEER IID)**
- II. The Institutes for Methods and Practices in STEM Education Research track (ECR: BCSEER: IMP)
- III. Conference Proposals.



ECR: Building Capacity in STEM Education Research (ECR: BC SER) NSF 22-548

Goal: To build investigators' capacity to conduct high-quality STEM education research and broaden the pool of researchers who can advance knowledge in Critical STEM education areas.

Program Tracks

- **Two IID Tracks (new and experienced) .**
- Maximum Award amount is \$350,000 for three years
- Next Deadline: February 23, 2023





Part 1: Developing YOUR Idea for an ECR:BCSER Individual Investigator Development Project



Research Idea/Pilot Study (New) Research Project (Experienced)” What do I wish to investigate and contribute to STEM education research?

Identify the **broad area of Interest in STEM education** (pilot or research project).

Indicate one or more of the **EDU core areas of interest** (STEM learning and Learning Environments, Broadening Participation in STEM fields, STEM workforce development) .

Experienced investigators must articulate how their **project will contribute to theory building** in fundamental STEM education research



ECR: Core Research Areas

- Research Area I – Research on STEM Learning and Learning Environments
- Research Area II – Research on Broadening Participation in STEM
- Research Area III – Research on STEM Workforce Development

New Investigators: Pilot Study

Experienced Investigators: Fundamental Research Project



Individual Investigator Development in STEM Education Research (ECR:BCSER:IID) Program Tracks and Components

Investigators New to STEM Education Research

1. STEM Education Research Issues of Interest/Pilot Study
2. Self- Assessment
3. Professional Development Plan
4. Mentoring Structure

Investigators Experienced in STEM Education Research

1. Fundamental STEM Education Research Project
2. Self-Assessment
3. Professional Development Plan



From Project Idea to Professional Development Plan

Research Topic

The **broad topic area** that informs your research agenda and the **methodological approaches** that inform your research in this topic area.

Self Assessment Questions

1. What aspects of this topic are you most skilled?
2. What knowledge and skills would you like to develop to expand your research capacity in this area?
3. What research questions CAN you ask that will expand your capacity to conduct research in this topic area?



Self- Assessment Plan: Activity



1. What knowledge and skills do you **currently possess**?
2. What **skills do you need to develop** to conduct this study and build your capacity to conduct STEM education research?
3. Identify the **knowledge and skills** that you will develop through conducting this research
4. What **professional development experiences** would support you in developing thee knowledge and skills?



Your Research Idea (NEW)/Research Project (EXPERIENCED)



In 25 words or less, articulate your research idea/Project and how this project will build your capacity to conduct STEM education research:

My research will explore how identity, agency and institutional context influence the academic achievement, persistence, and career choice of first-generation, high-achieving African American mathematics majors who study at HBCUs. Using critical perspectives in research, developing qualitative and mixed methods research skills. I plan to build an assets based model.

Self Assessment Considerations

- Strong quantitative skills and extensive background in literature
- Need to develop grounded theory approaches and critical quantitative methods
- Question would focus on mixed methods and survey development



Professional Development Plan: How will I develop into the STEM education researcher I want to become?



In consultation with your mentors, create a professional development plan to build your knowledge and capabilities in STEM education research. Considerations:

1. Clearly articulated goals and activities
2. **Include timeline, rationale, and outcomes of research and PD activities**
3. **Connect the PD activities to the research project activities**
4. An advisory board for research is highly encouraged.



Professional Development Plan: (3 year project plan)

Research Phase	Timeline	Possible PD Activities
Preparation	3 months	Literature review, developing conceptual approaches, mentor meetings, target PD workshops
Conceptualization	6 months	Operationalizing concepts/definitions, attending BC SER institutes, establishing partnerships, attending targeted workshops
Implementation	9 months	Experiences collecting, managing, documenting and archiving data, mentoring junior collaborators
Reporting	6 months	Convening/attending writing groups
Dissemination	6 months	Deepening understanding of Dissemination Science, co-developing dissemination plan with stakeholders
Extension	2 months	University sustainability activities, targeting meetings with key stakeholders, developing research projects with mentors



Mentoring Plan : Who are the members of my “squad” and their role?

The mentoring structure that will guide the PI in the professional development activities and pilot research project. Includes:



1. Names and Contacts of Mentors
2. Rationale for selecting mentors, collaborators and/or advisory board members
3. Description of their roles in the research and PD plan
4. Letters of commitment or support from at least one of the mentor with expertise in their areas of interest
5. Plan to attend (virtually or in person) research group meetings of the chosen mentors
6. **Develop a mentoring framework and strategy that articulates HOW you will engage with your mentors and some key outcome metrics**





Part 2: Crafting Your One-Page ECR:BCSER IID Research Project Summary



Crafting a One-Page Project Summary

Three Elements of a One-Page Project Summary:

- 1. Overview:** The overview includes a description of the key components of the BC SER IID project description (Project, self-assessment, PD plan, mentoring plan (NEW))
- 2. Intellectual Merit:** The statement on intellectual merit should describe the potential of the proposed activity to advance knowledge in the discipline.
- 3. Broader Impacts:** The statement on broader impacts should describe the potential of the proposed activity to benefit society and contribute to the achievement of specific, desired societal outcomes.



Overview Section: One-Page Summary ECR:BSCER IID Project

Key Components

1. STEM education research issues of Interest and pilot study (new) or fundamental STEM education research project (experienced)
2. Self-assessment
3. Professional development plan (critical component of IID project)
4. Mentoring plan (new)



Pilot Study or Research Plan: Explaining the How



1. Proposes research questions or testable hypotheses that reflect the current state of knowledge and theory (New vs Experienced)
2. Uses the methods to answer the research questions or test the hypotheses
3. Describes the measures, instruments, and procedures to be used in the data collection and data analysis strategies
4. Transformative Idea and contribution to **fundamental research** and theory building (Experienced)
5. **Connects to your PD Plan to Build Competencies and Skills**



My Example: How?



Research question:

- *How does mathematics identity and agency influence first-generation high-achieving African American mathematics majors at HBCUs success, persistence, and mathematics career choice? What might an asset-based model look like that explains how institutional context informs the development of positive identity and student agency?*
- 30 African American mathematics majors from 12 HBCUs will be interviewed using phenomenological qualitative research design using grounded theory techniques.
- Building Capacity to Conduct Mixed Methods research design data analysis techniques and I will develop a descriptive model that describes the relationship between institutional context, mathematics, identity, and agency on student outcomes using grounded theory approaches and developing targeted survey instruments



Crafting the elements of your BCSEER project description



For each of the overview areas, write 2-4 sentences that reflect your initial ideas related to each of the components of the project description. Please be creative and expressive without concern about the wording, grammar, etc. This activity is designed to help you get your ideas on paper and not to have a perfectly fleshed out project description.

Since this is a capacity building project, pay close attention to the professional development plan and how it connects to the mentoring plan and research project. Identify elements of the self assessment that will be enhanced by conducting the research project and how the elements of the PD plan are connected to all phases of the work.



Think-Pair-Share



Intellectual Merit and Broader Impacts



Contributions: (Intellectual Merit)

- Field?
- ECR research focus area?
- Transformative Idea?
- Project team expertise?

Benefits: (Broader Impacts)

- Institutional?
- Historically marginalized groups?
- Dissemination?
- Field?
- Society?



My Example: BCSER IID (experienced)

How does mathematics identity and agency influence first-generation high-achieving African American mathematics majors at HBCUs success, persistence, and mathematics career choice? What might an asset-based theoretical model look like that explains how institutional context informs the development of positive identity and student agency?

Self-Assessment: Developing Capacity to conduct Grounded Theory study

PD activities: Attending BSCER institute focused on advanced qualitative methods, quarterly with identified mentors, survey development and design workshops

Intellectual Merit: developing an assets based model of persistence of Black students, rigorous methodological approach,

Broader Impacts: Broadening Participation, Dissemination of model to non-HBCU institutions



Any Questions?





Part 3: Sharing your ECR:BCSER Project Summary to gain insight and feedback to refine your project idea and project summary



Choose a Breakout Room



Directions for Breakout Rooms

- Choose a breakout room that closely aligns with the questions you would like answered
 - A few volunteers will share their proposal idea to receive feedback from the group
 - Ask specific questions related to being a new or experienced STEM Education Researcher or general questions about BCSER IID
- **Breakout Room 1:** I am an **experienced researcher** and want to discuss my specific project idea (David)
 - **Breakout Room 2:** I am **new** to STEM education research and have specific questions about the presentation (Roni)
 - **Breakout Room 3: General Q&A** or I have an idea but I'm not sure if BCSER IID is the right fit (Erin)



Questions and Next Steps?



Next Steps

- Finalize your one-page project summary
- Register for the November 13th session to discuss your proposal idea with a program officer
- Complete the post event survey that will be emailed to you

