Know Yourself, Get on the Right Bus, and Develop a Sustainable Research Agenda

Dr. Li Feng, Ph.D., Ed.S.
Professor of Economics
Department of Finance and Economics
McCoy College of Business
Texas State University

College of Education
Funded Research Lecture Series
Texas State University
April 8, 2022

1

Pre-flight Screening Questions

(a) what you want and/or expect to get from the workshop
(b) what are your past experiences in collaboration and mentoring
(c) what is your initial idea for a potential grant submission

2

Outline

- Li's Current NSF Projects
  - STEM Communities (co-PI)
  - Collaborative Noyce Research Project (PI/PD)
  - CAREER (Senior Personnel)
- Four step to greatness
  - Step 1. Disciplined people: Build Your Dream Team
  - Step 2. Disciplined thought: What is the Big Idea?
  - Step 3. Disciplined action: Prepare Your Proposal
  - Step 4. Building to Last: Revise and Resubmit
  - **Outputs: superior results, distinctive impacts, lasting endurance**
- Funded proposal/Unfunded proposal
  - Project summary examples
  - Logic model examples

3

Collaborative Research: Retention, Persistence, and Effectiveness of STEM Teachers in High-need School Districts-An Investigation of the NSF Robert Noyce Teacher Scholarship

National Science Foundation(Award No. #1950292), Division of Undergraduate Education, National Science Foundation, 2020-2024, $1,160,761

Core Research Team: Dr. Li Feng (PI and Project Director), Dr. Mike Hansen (PI at the Brookings Institution), Dr. David Kumar (PI at Florida Atlantic University)

Collaborators: Dr. Ann Cavallo and Dr. David Sparks (the University of Texas at Arlington), Dr. Hunter Close (Texas State University), Dr. John Pecore (the University of West Florida), Dr. Maria Fernandez (Florida International University)

Graduate Research Assistants: Xiu Wu and Anna Streichhardt
Undergraduate Research Assistant: Richard Vega

https://research.mccoy.txstate.edu/robert-noyce-track.html

4

Creating Faculty-Student Communities for Culturally Relevant Institutional Change

National Science Foundation(Award No. #1928696) Division of Undergraduate Education, National Science Foundation, 2019-2024, $2,499,933

Dr. Heather Galloway (PI), Dr. Li Feng (co-PI), Dr. Eleanor Close(co-PI), Dr. Alice Omstead (co-PI), and Dr. Cynthia Luxford (co-PI)

Graduate Research Assistants: Babitha Govindaiah Babitha and Sowjanya Koka

Undergraduate Research Assistant: Daniel Payan

https://www.cose.txstate.edu/STEMCommunities/About-Us.html

5

CAREER: Effects of Community Cultural Wealth on Persistence of Black and Hispanic Women in the P-20 Computing Workforce Pipeline in Texas

National Science Foundation(Award No. # 2046079)Division of Human Resource Development $843,895.00

This project will examine the effects of community cultural wealth on the persistence of Black and Hispanic women in computing education and the workforce. Participants in the study include a national cohort of students enrolled in computer science coursework and degree programs from eighth grade through undergraduate study.

Graduate Research Assistant: Kenneth Skidmore

Research & Evaluation Team

Dr. Shetay Ashford-Hanserd
Associate Professor
College of Applied Arts
Department of Organizations, Workforce and Leadership Studies
Principal Investigator

Dr. Li Feng
Professor
College of Business
Consultant: HSLS – Discrete Survival Analysis

Dr. Emily Summers
Associate Professor
College of Education
Consultant: STEM+C Majors Survey

Dr. Kavita Mittapalli
MN Associates, Inc.
External Evaluator

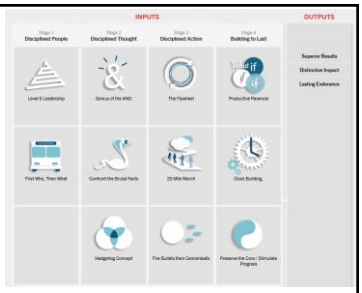
6

Get the Right People on the Bus

7

Good to Great
by Jim Collins

Roadmap



8

Four Steps to Grant Greatness

- ❑ Step 1. Disciplined people
- ❑ Step 2. Disciplined thought
- ❑ Step 3. Disciplined action
- ❑ Step 4. Building to Last
- ❑ Outputs: superior results, distinctive impacts, lasting endurance

9

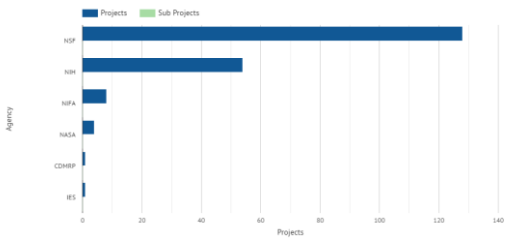
Step 1. Disciplined People
Get on the Right Bus
Build a Dream Team

10

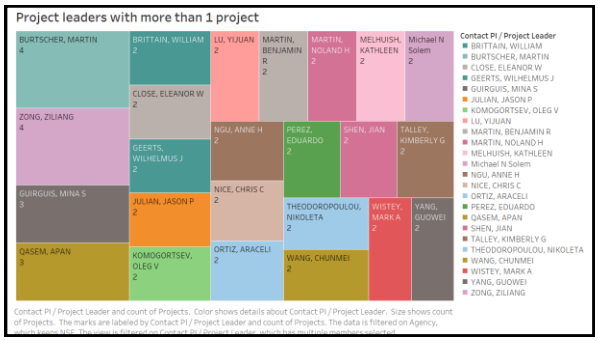
Current Landscape
of the NSF Funded
Projects at Texas
State University

11

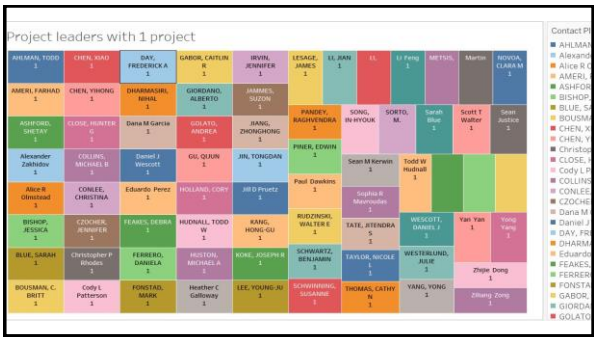
Federal Funding Sources at Texas State University



12



13

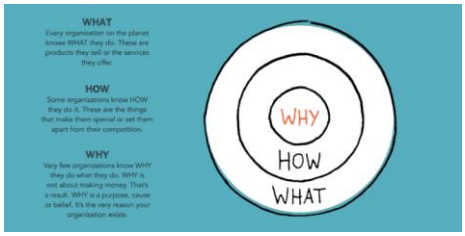


14

Step 2. Disciplined Thought
What is the Big Idea?

15

Starts with why by Simon Sinek



16

Research Questions

How to formulate good research questions for NSF?

Handout to provide a list of good and bad research questions.

Kahoot exercises to see if they can pick out some research questions that are funded versus those are yet to be funded.

17

Disciplined Thoughts

(1) What are the characteristics of STEM teachers in high-need school districts and how have these characteristics changed over time?

(2) What factors are associated with STEM teacher retention and persistence in high-need school districts?

(3) What types of district or school programs or policies are associated with stronger STEM workforce measures?

(4) What is the estimated impact of proximity to the Noyce program on the STEM teacher workforce in high-need school districts?

(5) Do high-need school districts with higher proportions of Noyce graduates perform better on student outcomes or experience smaller race- or poverty-based gaps than other high-need school districts with fewer Noyce graduates?

(6) What are the demographics and qualifications of the STEM teacher candidate pool, and how do they change during the training process?

(7) Do different programs have varying levels of success getting candidates through their programs?

(8) How do local high-need school districts perceive teachers coming from Noyce institutions?

18

Step 3. Disciplined Action
Grant submission

19

NSF EHR Programs

Directorate for Education and Human Resources (EHR)

https://nsf.gov/funding/programs.jsp?org=EHR

List below at least one and at most five EHR programs that you may be interested to learn about during the workshop. Please enter each program on a separate line and use the program abbreviation if applicable.

1. Division of Graduate Education (DGE)
2. Division of Research on Learning in Formal and Informal Settings (DRL)
3. Division of Undergraduate Education (DUE)
4. Division of Human Resource Development (HRD)

20

Merit Review Process

21

Merit Review Criteria: Intellectual Merit

- Potential to advance knowledge and understanding within and across fields
- Qualifications of investigators
- Creativity and originality
- Conceptualization and organization
- Access to resources

https://tipsforreviewers.nsf.gov/

22

Merit Review Criteria: Broader Impact

- Advances discovery while promoting teaching, training and learning
- Broadens the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)
- Enhances the infrastructure for research and education, such as facilities, instrumentation, networks and partnerships
- Results disseminated broadly
- Potential benefits to society

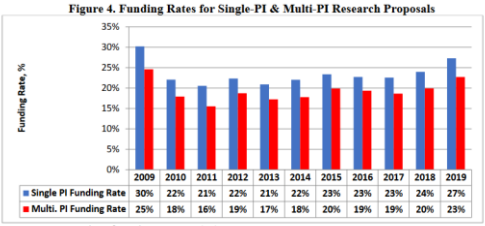
23

Step 4. Building to Last
Grant resubmission

24

Success Rate

Figure 4. Funding Rates for Single-PI & Multi-PI Research Proposals



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Single PI Funding Rate	30%	22%	21%	22%	21%	22%	23%	23%	23%	24%	27%
Multi. PI Funding Rate	25%	18%	16%	19%	17%	18%	20%	19%	19%	20%	23%

Source: NSF Enterprise Information System, 10/01/19.

25

Resubmission,
once, twice, thrice

1. Read all of your panelists and panel review once
2. Put these comments in a drawer
3. Take a vacation
4. Open your drawer and read panelists and panel review one more time
5. Ask a mentor or several mentors to read comments to see what you could improve
6. Plan your next submission

26

Hands-on Learning

27

slido

What is your research area?

ⓘ Start presenting to display the poll results on this slide.

28

slido

Give me an example of your research question.

ⓘ Start presenting to display the poll results on this slide.

29

Logic Model

Logic models for program design, implementation, and evaluation: Workshop toolkit

Logic Models and Theory of Change Models: Defining and Telling Apart

Logic models and theories of change

30