

Coordinating Multiple STEM Grant-Funded Projects for Maximum Impact on Student Success

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ABSTRACT

Supporting STEM programs, particularly for women, is crucial to fostering a diverse and innovative workforce to address today's global challenges. Because funding is so often limited in higher education, we worked to align the goals and resources of multiple STEM grant projects at the largest public institution primarily for women in the US to impact and student success. **The integration of funding streams, innovative curriculum, and co-curricular supports enables a comprehensive approach to address key challenges in STEM education, including increasing retention, improving diversity, and expanding research opportunities.** By coordinating institutional efforts with multiple grant-funded programs, this initiative will streamline support services, provide unified mentorship and professional development opportunities, and create pathways for student engagement in research and industry collaborations. **The ultimate goal is to build a sustainable, scalable model that can be used to increase the success of students in STEM fields and meet growing workforce demands.**

INTRODUCTION

Texas Woman's University (TWU) is the nation's largest university system focused on women. A public university with three campuses (Denton, Dallas, and Houston), TWU is a Hispanic-Serving institution with a fall 2024 enrollment of 16,338 students (89% female). TWU is ranked as one of the country's most diverse institutions, with ethnic minorities making up 57.9% of the student population. Many TWU students are first-generation, economically marginalized, and without the generational knowledge and/or funds to successfully matriculate in higher education.



Effective coordination of diverse STEM initiatives across the institution is crucial for leveraging resources and achieving broader educational and career outcomes. Our projects target students at various educational stages, emphasizing scholarship opportunities, research experiences, and pathways for advancing careers in STEM.

OBJECTIVES

- Integration of Funding Streams:** harmonize institutional resources with support from a private foundation, NSF, and ED to enhance program sustainability and student impact.
- Scholarship Based Initiatives:** design scholarship programs to attract, retain, and graduate talented students in STEM disciplines.
- Pathways Development:** collaborate in designing clear pathways with seamless transitions from community college to baccalaureate to graduate study and alignment with workforce needs.



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METHOD

Effective strategies in project management, student support services, and curriculum development are tailored to the needs of diverse student populations.

NSF STAR (2019)-Over its five-year duration, Scholarships, Teaching, and Research (STAR) will provide up to three years of scholarship support (\$10,000/year) to 35 students who are pursuing bachelor's degrees in biochemistry, biology, chemistry, computer science, informatics, and math. Rather than basing project activities on a deficit model focused on barriers to success, activities are based on supports to success.



NSF PRIME (2020)-Partnerships, Research, Internships, Mentoring, and Engagement (PRIME) includes three key elements: 1) redesigning introductory courses in biology, chemistry, and mathematics, 2) supporting faculty to include innovative, evidence-based, and culturally relevant approaches in their teaching, and 3) providing opportunities for students to engage in mentored research internships with local STEM industries.



NSF SCALE (2021)-Over its six-year duration, Scholarships and Co-curricular Activities Leading to Excellence (SCALE) will fund scholarships (\$10,000/yr) to 56 full-time students who are pursuing professional science master's degrees in biotechnology. New graduate students receive two years of scholarship support and continuing students may receive one year of scholarship support. Students are placed in cohorts to develop social connections and have access to mentoring from peers, faculty, and industry partners.



ED ACCESS (2022)-Accelerating Completion and Career Education in the School of the Sciences (ACCESS) aims to support students in completion of master's degrees in biotechnology, biology, chemistry, mathematics, or information data science so they may pursue careers in their chosen STEM fields. This is accomplished through a comprehensive range of support services, including scholarships, stipends, mentorship, research opportunities, tutoring, career guidance, a lending library, and accelerated degree pathways.



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METHOD (continued)

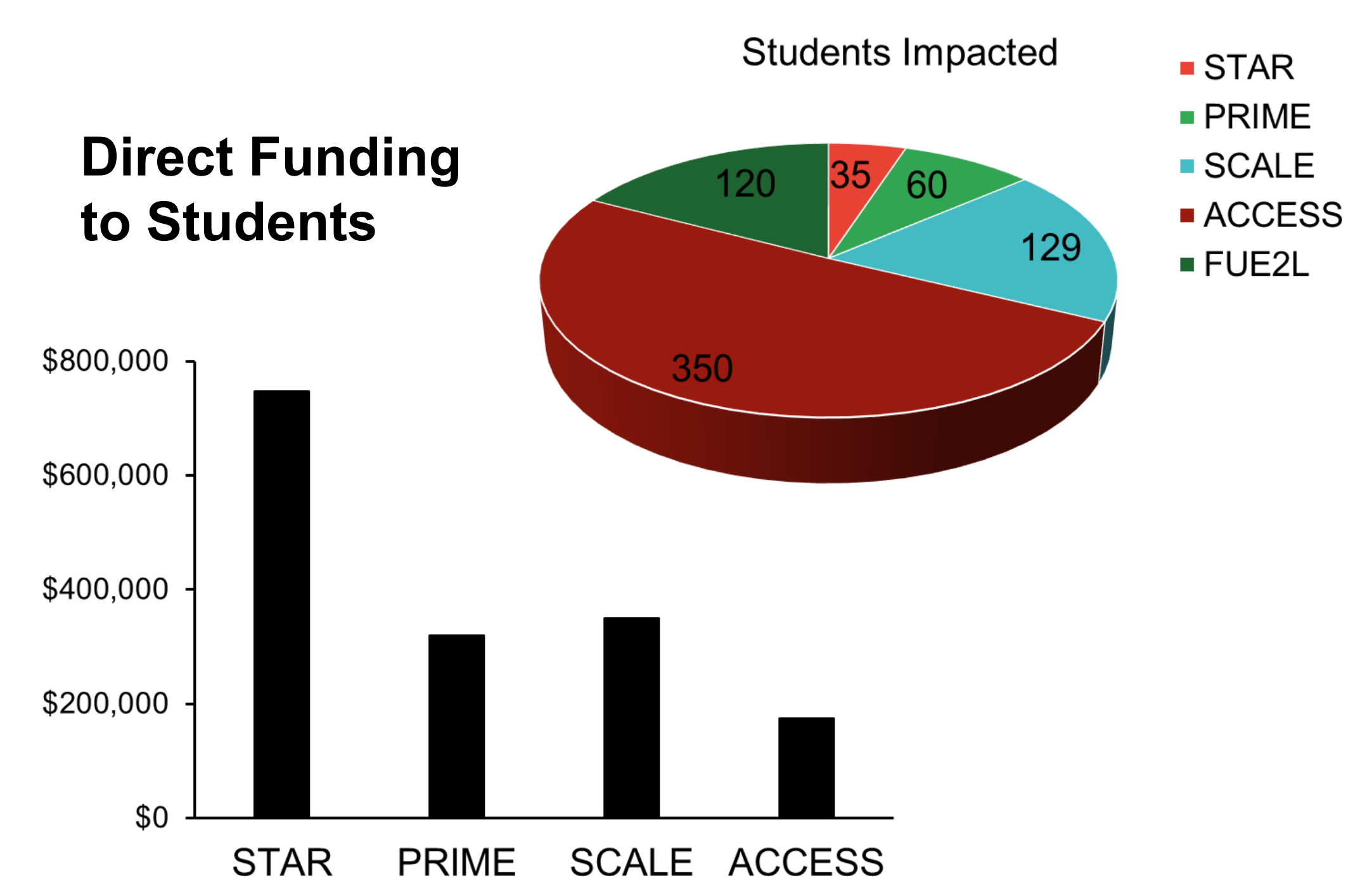


Lyda Hill Philanthropies FUE²L (2023) – The Fostering Undergraduate Engagement through Experiential Learning (FUE²L) project involved 120 students from three local community colleges, with ten students selected for two-week micro-internships in research labs at TWU. It also includes robust tracking of where participants complete their college educations, as well as scholarship support for at least seven program participants who transfer to TWU to receive a four-year STEM education.

The collaborative impact of these projects and personnel efforts have provided multiple pathways and support systems to fit the needs of our unique student population.

RESULTS AND IMPACT

- More than 700 students have participated in grant sponsored events, and over 200 have received direct financial support total of \$1.7 million.**
- Students participate in cohort activities, research experiences, paid internships, and career exploration.
- Faculty and staff engage in professional development, discuss and implement inclusive practices, and actively monitor student success.
- Programming includes workshops on topics including emotional intelligence, leadership, communications skills, and personal wellness.
- Project staff meet regularly and maintain open communications to synergize activities for maximum impact.



CONCLUSIONS

Best practices for coordinating and optimizing institutional resource with multiple STEM grant-funded projects include strategic planning, clear communication, resource integration, and consistent assessment of program outcomes. Aligning funding priorities and creating synergies between different programs has increased student retention, participation in research and internships, and successful job placement. These efforts not only ensure the efficient use of grant resources but also position TWU as a leader in promoting STEM education and addressing critical workforce needs.



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