

Innovative Funding Models in Master's Education

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Master's Association (NPSMA)

professionalsciencemasters.org



Outline

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- II. Funding Examples from PSM Programs
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Professional Science Master's PSM

PROFESSIONAL SCIENCE MASTER'S

An innovative degree that:

- Prepares graduates for STEM careers in business, government, or non-profit sectors.
- Combines rigorous study in science or mathematics with workforce skills-based curriculum in business, management, policy, communications, law, or other fields - “Science Plus!”

“Creating Tomorrow’s STEM Innovators”

www.professionalsciencemasters.org

National Professional STEM Master's Association

- The NPSMA manages affiliation of universities offering PSM programs through a peer-review and external review committee process.
- A revolving group of volunteer expert reviewers who are PSM program directors, administrators, and industry representatives, sustain this quality assurance mechanism.
- NPSMA also hosts monthly webinars “Ask NPSMA” and an Annual Conference to support members.
- In collaboration with CGS, NPSMA has also developed an **msIDP**. Learn more at msIDP.org

PSM Programs...

- Emphasize the written and verbal communication skills, leadership, and team-building required in professional settings.
- Include project or team experience vs. thesis: i.e., real world experience.
- Provide connections to potential employers through internships.
- Often include interdisciplinary courses.

Program Examples

- Biotechnology
- Forensic Science
- Financial Mathematics
- Data Science
- Environmental Science
- Global Information Systems
- Bioinformatics
- Computer Science
- Cybersecurity
- Sustainability
- Science Entrepreneurship
- Statistics

Connections with Industry

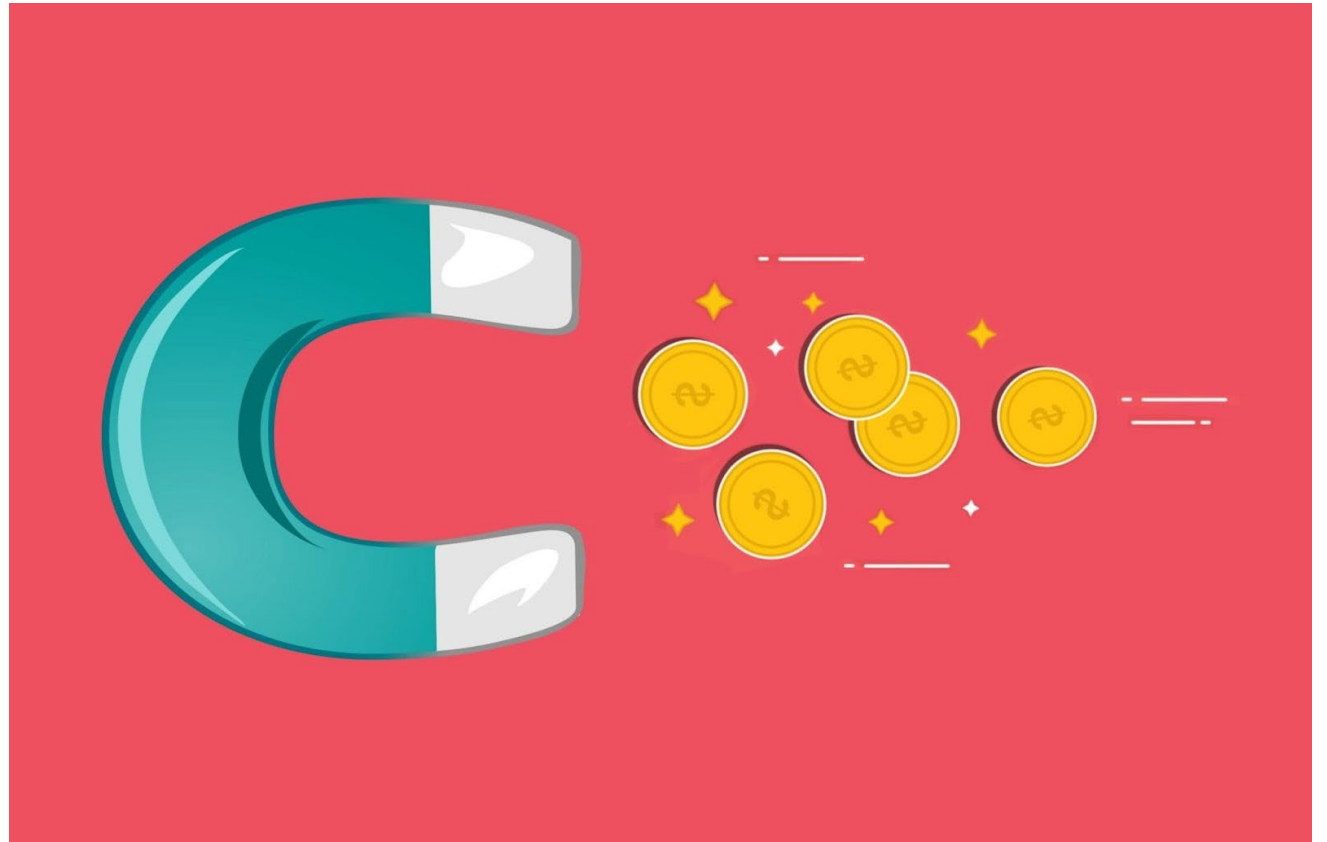
- With input from advisory committees of local and regional employers, curricula are designed to be responsive to workforce needs.
- Unusually nimble in adjusting to shifting workforce demands and to rapidly changing research strategies and technologies.

Major PSM Initiatives

- **Grand Valley State University**
 - Biostatistics, Cell and Molecular Biology, Data Science and Analytics, ...
- **Temple University**
 - Bioinformatics, Biotechnology, Cyberdefense, Forensic Chemistry, ...
- **Rice University**
 - Applied Chemical Science, Environmental Analysis & Decision Making, Space Studies, ...
- **Rutgers University**
 - Actuarial and Statistical Analysis, Engineering Management, Food Science, ...
- **University of Utah**
 - Earth Resource Management, Science Instrumentation, ...

Funding Examples from PSM Programs

- A. Grants & Endowments
- B. Industry Partnerships
- C. Curricular Tools



Grants

- A number of PSM programs have been successful in obtaining funds through grants, both at the local/state and national/federal levels.
- Local/state: look for non-profit arms of big name companies headquartered in your area.
 - E.g., PSM at Saint Mary's College was developed with the support of a \$1M grant from the Lilly Endowment Inc., created by funds from Eli Lilly and Company.
- National/federal:
 - National Science Foundation S-STEM program
 - Department of Education GAANN program

NSF S-STEM Grant

- Established in 1998 “to enable **low-income students** with academic ability, talent or potential to pursue successful careers in promising STEM fields. Ultimately, the S-STEM program seeks to increase the number of academically promising low-income students who graduate with a S-STEM eligible degree and contribute to the **American innovation economy** with their STEM knowledge.”
<https://www.nsf.gov/pubs/2023/nsf23527/nsf23527.htm>
- Many PSM programs have obtained S-STEM grants:
 - Northeastern University
 - Texas Woman’s University

Northeastern University S-STEM

- **Title:** “An Accelerated Pathway from Associates to Master’s Degree in Biotechnology” aka “Biotech A2M Scholars Program”
- **Grant Period:** 2018-2024
- Grant provides scholarships (up to \$10k per year) to students with demonstrated financial need performing an associates degree at an external institution to a bachelor’s degree at Northeastern to the MS in Biotechnology (PSM) via a PlusOne accelerated program.
- Have granted scholarships to a total of 185 students thus far, with 9 students having already graduated with MS, and 14 scheduled to graduate May 2024.

Texas Woman's University

- **Title:** “Scholarships and Co-curricular Activities Leading to Excellence in the Biotechnology Workforce” aka “SCALE Project”
- **Grant Period:** 2022-2028
- \$1.5M grant: \$960k for scholarships; \$96k for students to travel to conferences and support co-curricular activities focused on retention
- Proposed Budget: 16 awardees each year, receiving \$10k per year for 2 years
- 8 students were funded in first year, 14 in second year
- Financial eligibility initially used 1.5 times poverty level, but worked with NSF Officer to increase threshold to 2.5 times poverty level

DOE GAANN Grant

- GAANN = Graduate Assistance in Areas of National Need
- “This program provides fellowships, through academic departments and programs of IHEs, to assist graduate students with excellent records who demonstrate financial need and plan to pursue the highest degree available in their course study at the institution in a field designated as an area of national need.”
<https://www2.ed.gov/programs/gaann/index.html>
- Requires an institutional match of 25%.
- PSM personnel at **Middle Tennessee State University** secured a GAANN grant (2019-2022) to support MSPS students in Engineering Management concentration.

Pell Grant

- “Federal Pell Grants usually are awarded only to undergraduate students who display exceptional financial need and have not earned a bachelor's, graduate, or professional degree. (In some cases, however, a student enrolled in a postbaccalaureate teacher certification program might receive a Federal Pell Grant.)”
<https://www2.ed.gov/programs/fpg/index.html>
- CGS is working to get eligibility expanded to graduate students.

Endowments

Saint Mary's College

- Took \$200k from Lilly grant to create an endowed account that provides scholarships to Indiana students. Interest from the endowment can also be used to support tech needs of faculty teaching in the PSM.

Rice University

- Saved \$100k from tuition revenue that was not distributed to the departments to start the endowment, and continue to contribute \$50k each year from tuition income. Interest is used to supplement corporate scholarships.

Industry Partnerships

- **Rice University has a Corporate Scholarship** that ranges from \$6-8k for about 10 students a year, distributed to students in 2nd semester, based on merit.
- **University of Connecticut** garnered support for PSM program by reaching out to local **trade associations**.
 - Connecticut Business and Industry Association (CBIA) provided an internship directed exclusively to small businesses. PSM personnel nominated student/business pairings and CBIA made the final decision.

Industry Support

Many PSM students fund their education with support from their employer through **tuition reimbursement programs**.

Examples:

- Steelcase offers up to \$5,250 per year for full-time employees, \$2,650 for part-time.
- ConocoPhillips will reimburse up to 90% of tuition, not to exceed \$8,500 per year, for full- and part-time employees.
- Deloitte reimburses full tuition for employees pursuing graduate degrees.

Sustaining Programs via Curricular Tools

- Develop **accelerated pathways** to funnel undergraduate students into the PSM
 - Northeastern University: PlusOne MS in Biotechnology
 - Saint Mary's College: 4+1 MS in Data Science
- Develop **certificate programs** to funnel other STEM master's students and working professionals into the PSM
 - University of Utah: Professional Development and Leadership Certificate
 - Northern Arizona University: Greenhouse Gas Accounting Certificate

How to Fund Master's Students

CGS Annual Meeting | December 8, 2023

Beth Mayer-Davis, PhD
Dean, The Graduate School
The University of North Carolina at Chapel Hill

Our Mission



The Graduate School at the University of North Carolina at Chapel Hill supports excellence in graduate education and fosters civic engagement and economic growth in North Carolina and beyond.

We **advocate**, **collaborate**, and **convene** to serve the nation's first public university, and to promote inclusive educational and professional development experiences for a diverse community of graduate students.

National Trends

From 07/21 to 06/22,

**47% of all federal student loans went to graduate students
*even though they only represented 21% of all borrowers***

- “If recent trends continue, graduate loans will soon comprise the majority of federal student loan disbursements.”
- “Too many borrowers graduate with debt levels that are too high relative to their early career earnings.”

A Compelling National Need

U.S. Bureau of Labor Statistics				
Master's, doctoral, and professional degree to enter:				
Occupations projected to have the most openings each year, on average, 2019–29				
	Occupation	Occupational openings, projected 2019–29 annual average	Median annual wage, 2019	Typical education needed for entry
1	Lawyers	39,900	\$122,960	Doctoral or professional degree
2	Educational, guidance, and career counselors and advisors	33,100	\$57,040	Master's degree
3	Health specialties teachers, postsecondary	26,000	\$97,320	Doctoral or professional degree
4	Nurse practitioners	24,200	\$109,820	Master's degree
5	Education administrators, kindergarten through secondary	20,000	\$96,400	Master's degree
6	Healthcare social workers	19,600	\$56,750	Master's degree
7	Postsecondary teachers, all other	18,900	\$68,970	Doctoral or professional degree
8	Instructional coordinators	17,700	\$66,290	Master's degree
9	Physical therapists	15,200	\$89,440	Doctoral or professional degree
10	Speech-language pathologists	13,700	\$79,120	Master's degree

The Local Story: Trends in the State of North Carolina

- Through 2030, jobs that **require a graduate or professional degree** are expected **to grow faster** than those requiring an undergraduate degree.¹
 - In NC, “direct care workers represent the most needed health care job.” The state “lost more than 9% of its direct care workforce between 2016-2021.”²
 - **As the population ages, NC is projected to suffer from significant shortages in the health care delivery workforce, with “an estimated shortage of nearly 12,500 registered nurses” by 2033.**³
 - As of August 2023, the Health Care and Social Assistance industry has the highest number of job openings in six of the eight prosperity zones; in the other two zones, it has the second highest number of job openings.⁴

Nash & Edgecombe Counties

Top Occupations in the Healthcare and Social Assistance Industry That Require a Master's Degree				
Rocky Mount-Wilson Sub-Prosperity Zone				
Occupation Title	Employment Estimate 2021	Employment Estimate 2030	Net Change	% Change
Nurse Practitioners	107	145	38	35.5%
Speech-Language Pathologists	80	94	14	17.5%
Physician Assistants	70	82	12	17.1%
Occupational Therapists	61	69	8	13.1%
Rehabilitation Counselors	73	80	7	9.6%
Healthcare Social Workers	54	56	2	3.7%

County (Tier)	Edgecombe (1)	Nash (1)
% Over 65	21.2	19.5
% Rural	44.8	49.7
% Fair or Poor Health	20.1	16.2
% Diabetes	11.9	12.6
Lung Cancer Incidence Per 100,000	69.0	65.1
Breast Cancer Incidence Per 100,000	116.0	139.3
% Babies Low Birth Weight	12.6	10.4

How Can We Better Support Graduate and Professional Education?

- Legislatively supported loan repayment
- Philanthropy
- Federal or Foundation Grants
- Industry (*Thanks Kristin!*)

Retroactive vs. Prospective Loan Forgiveness Programs

- Retroactive loan forgiveness requires students to have already completed a program and taken out loans.
- Benefits of prospective loan forgiveness programs:
 - Loan forgiveness is conditional upon the performance of related work in a community of need for a set period of time.
 - Attracts talented students into these critical workforce fields and the required degree programs.
 - Students enter a program with known funding, which could increase enrollment and alleviate projected workforce shortages, thus having a beneficial impact on these communities of need.

Other State Loan Repayment Programs

- **Retroactive** loan forgiveness programs are common across the country (see [one list from Forbes](#) here)
- Examples include the California State Loan Repayment Program and the North Carolina Loan Repayment Program
- **Prospective** loan forgiveness programs appear to be less common

Student Loan Forgiveness Programs by State

State	Forgiveness Programs
Alabama	Alabama Math and Science Teacher Education Program (AMSTEP)
Alaska	SHARP Program
Arizona	Primary Care Provider Loan Repayment Program (PCPLRP) Rural Private Primary Care Provider Loan Repayment Program (RPPCPLRP)
Arkansas	State Teacher Education Program (STEP)
California	California State Loan Repayment Program (SLRP) CDA Foundation Student Loan Repayment Grant
Colorado	Colorado Health Service Corps Colorado Law's Loan Repayment Assistance Program (LRAP) DU Loan Repayment Assistance Program (LRAP)
Connecticut	CHESLA Alliance District Teacher Loan Subsidy Program
Delaware	Delaware State Loan Repayment Program (SLRP)
District of Columbia	DCBF Loan Repayment Assistance Program (LRAP) DC Health Professional Loan Repayment Program (HPLRP)

California State Loan Repayment Program

“The California State Loan Repayment Program (SLRP) increases the number of primary care physicians, dentists, dental hygienists, physician assistants, nurse practitioners, certified nurse midwives, pharmacists, and mental/behavioral health providers practicing in federally designated California Health Professional Shortage Areas.”

North Carolina Loan Repayment Program

“The Office of Rural Health (ORH) offers qualifying providers, with educational (student) loan debt, incentive payments to repay their loans tax-free through [the] North Carolina Loan Repayment Program (NC LRP). Incentive payments are awarded to eligible providers in exchange for providing comprehensive primary care services in outpatient settings at eligible sites serving those with the highest need located within Health Professional Shortage Areas.”

California State Loan Repayment Program

Eligibility Requirements (selected)

- Employed at/have accepted employment at a SLRP-approved Practice Site.
- Commit to providing a 2-year full-time (40 hours per week) or a 2-year half-time (20 hours per week) service obligation.

Eligible Professions (selected)

- Medical Doctors (MD) and Doctors of Osteopathic Medicine (DO)
- Primary Care Physician Assistant (PA)
- Primary Care Nurse Practitioner (NP)
- Pharmacists (PharmD)
- Licensed Clinical Social Worker (LCSW)
- Doctors of Dental Surgery (DDS) and Doctors of Dental Medicine (DMD)
- Substance Use Disorder (SUD) Counselor

Full-Time Award Amounts

- 2-Year Commitment – up to \$50,000
- 1st year (optional extension – up to \$20,000
- 2nd year (optional extension – up to \$20,000
- 3rd year (optional extension – up to \$10,000
- 4th Year (optional extension – up to \$10,000

North Carolina Loan Repayment Program

Eligibility Requirements

- Employment at NC LRP-approved site
- Service commitment of up to 4 years

Eligible Professions (selected)

- Primary Care Physicians
- Dentists
- Dental Hygienists
- Nurse Practitioners
- Physician Assistants
- Certified Nurse Midwives

Awards

- Up to \$100,000 for PCP and Dentists
- Up to \$60,000 for Dental Hygienists and Advance Practice Providers

The Forgivable Education Loans for Service (FELS) Program: North Carolina

“Established by the North Carolina General Assembly in 2011, the Forgivable Education Loans for Service **provides financial assistance to qualified students enrolled in an approved education program and committed to working in critical employment shortage professions in North Carolina.**”

- Managed by the NC State Education Assistance Authority
- Initial focus on teachers, nurses, and allied health professionals
- Designed to be flexible to respond to future employment shortages in the State
- In FY 2021-22, FELS awarded **2,115 loans totaling \$20,295,150**
- One academic year of loans will be forgiven for each year of full-time qualifying employment or for two years of part-time qualifying employment
- Master’s students: \$5,000-10,000 per year

FELS Timeline

The application period is typically open from January to March

- When the application opens, it will be for a loan for the upcoming Fall 24/Spring 25 semesters
- The applicant doesn't have to be fully admitted to the academic program to apply to FELS, but for funds to be disbursed, the applicant would have to be fully admitted to the program
- FELS then typically notifies students within 1 month of March 1 via email whether they have been awarded or not
- The applicant typically accepts the award (even if they don't know if they're accepted to the academic program), but if they do not get into the academic program or if they change their mind, they can cancel the FELS award before it's disbursed without penalty

Selected Eligible Programs

Program	Diploma/ Associate's	Bachelor's	Master's	Doctoral
Clinical Mental Health Counseling			X	X
Clinical Nurse Specialist			X	X
Nursing – BSN-DNP				X
Nursing – MSN			X	
Nurse Practitioner			X	
Occupational Therapy			X	X
Optometry				X
Pharmacy				X
Physical Therapy				X
Physician Assistant			X	
Radiography	X	X	X	
Radiology	X	X	X	
Social Work			X	X

Philanthropy: Funding Needs

- Paid summer internships
 - \$8,000 annual
 - \$160,000 endowment
- Cost of attendance*
 - \$50,576 annual
 - \$1,000,000 endowment
 - Additional stipends (for example – to cover MSW practicum)

**Varies by department and based on stipend minimums for demonstration purposes only*

Philanthropy: Funding Motivation

Students with master degrees benefit business and society

- Good for the economy and the health of our society
- Implementers of solutions to our biggest challenges
 - Healthcare
 - Education
 - Climate change
 - Safety/Security
 - Changing world

Philanthropy: Funding Sources

Private

- Targeting individual donors and private foundations interested in workforce development and/or with a specific passion for individual areas (i.e. social work, nursing, etc.)

Corporate—targeting corporations that benefit from these future employees

- Potential benefit to either offer fully paid internships or cost-share to connect with future employees
- Networking opportunities for funders with students at career fairs, small events, etc.
- Include these decision makers in committee/advisory roles when able at school

Philanthropy: Another Example

Thomas R. Morris Endowment Fund (\$2.5 million)

- Managed by The Graduate School
- Supports students in the areas of Public Health, Dental, Nursing or Medicine
- Academic awards with preference given to students with a physical disability

Federal or Foundation Grants

Training Grants

- NIH, NSF, other
- Individual (e.g., F31) or Institutional (e.g., T32)

Foundation (specific to discipline or cause)

- Many examples

These grants can cover full “cost of attendance” or simply provide modest support to supplement income or cover research costs.

Thank you