

The STaR Program Continues to Rise

Barbara Reys and Robert Reys

An award from the National Science Foundation helped establish a program for early-career mathematics educators as they transition from completion of a doctoral program to a faculty position in an institution of higher education [1]. The program name (STaR) is derived from its focus on Service, Teaching, and Research. The program was initially modeled on Project NExT, a successful induction program for mathematicians entering careers in institutions of higher education, but it has subsequently established its own identity. This article provides a status report about the program.

Who can participate? The STaR program is open to anyone completing a doctorate in mathematics education and who is in their first or second year of a tenure-track position in mathematics education at an institution of higher education. The academic appointment can be in either a mathematics department or in a college or school of education. Typically thirty to thirty-five STaR Fellows are accepted each year based on available funds. In order to apply, the applicant must confirm support from their department chair or dean indicating the home institution's willingness to provide travel funds for the applicant to attend the summer institute and a follow-up meeting that coincides with

the annual meeting of the Association of Mathematics Teacher Educators (AMTE). The STaR Fellows are provided lodging and some meals during the summer institute. The application process is announced each fall through the AMTE website and newsletter, as well as in the MAA *Focus*. Application review occurs in the fall with notification to applicants in January.

What happens during the summer institute? Prior to the five-day institute, STaR Fellows are asked to identify their teaching and research interests. While research interests vary, most fall into areas such as teacher knowledge/beliefs, teacher preparation, student learning, instructional materials/curriculum, and equity/diversity; whereas teaching interests tend to fall along traditional lines, such as courses directed toward elementary, middle, or secondary teacher education candidates (undergraduate and graduate level).

Four to six staff members—typically, mid- and senior-career mathematics educators—facilitate the institute. The institute consists of plenary sessions on teaching, research, and service that are led by the staff. In addition to the plenary sessions, special interest groups are established that focus on research and teaching. For example, STaR Fellows teaching courses (content or methods) that are targeted toward middle school teachers meet to discuss what they are doing, share syllabi, discuss challenges they face, and exchange ideas about teaching these courses. These special interest groups continue to dialogue during the year as they teach comparable courses. In a similar manner, research groups are formed that allow STaR Fellows to meet with other mathematics educators sharing similar research interests. These meetings might result in STaR Fellows designing and conducting a joint research effort across multiple institutions, and sometimes this work

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evolves into proposals for funds to support their collaborative research.

In addition, each STaR Fellow is asked to prepare a manuscript prior to the institute so that it can be read by the staff and other STaR Fellows who have a similar interest. The manuscript may be targeted toward teachers or researchers, but often is based on their dissertation. These manuscripts are then critiqued, discussed, and frequently revised during the institute. Continued work on these manuscripts has resulted in many scholarly publications by the STaR Fellows, some of which are coauthored with other STaR Fellows.

There is also free time during the institute that allows for continued discussion on topics of mutual interest. The personal networking established during the institute and continued throughout the years following the institute is a particular strength of the program, as many Fellows work in isolation at their home institution (e.g., they may be the only mathematics educator in their department). Fellows also meet again at the annual meeting of AMTE.

Who are the STaR Fellows? The majority of STaR Fellows have prior teaching experience in K-12 classrooms, but they come with different backgrounds and interests. About two-thirds of the STaR Fellows are female. About one-half of them have a master's degree or the equivalent in mathematics completed prior to or as a part of their doctoral preparation. Thus far, STaR Fellows have completed doctoral programs in seventy-two different institutions of higher education, most of which are in the USA (Table 1). However, the variability of doctoral programs in mathematics education has been well documented [3], [4], so the doctoral graduates enter the STaR program with a wide range of knowledge, interest, and backgrounds. Furthermore, their career goals vary, as about one-half of the STaR Fellows have their tenure home in mathematics departments, typically teaching a range of mathematics courses and courses targeted toward future K-12 teachers [2], whereas STaR Fellows in colleges/schools of education are teaching methods courses for K-12 teachers, supervising interns in K-12 schools, teaching graduates courses in mathematics education, and typically working in institutions that have doctoral programs in mathematics education.

Table 1. Institutions from which STaR Fellows received their doctorate and the number of graduates from these institutions.

Arizona State University (4)	University of Central Florida (4)
Auburn University	University of Cincinnati
Baylor University	University of Colorado
Boston College	University of Delaware (7)
Boston University (4)	University of Florida
Brigham Young University	University of Georgia (16)
Florida State University	University of Houston
Georgia State University (2)	University of Illinois-Chicago (2)
Harvard University	University of Illinois-Urbana (2)
Illinois State University (6)	University of Kansas
Indiana University (8)	University of Kentucky (2)
Iowa State University	University of London (Education Institute)
Kennesaw State University	University of Louisville
Kent State University	University of Maryland (5)
Mercer University	University of Miami
Michigan State University (11)	University of Michigan (2)
Montana State University (2)	University of Minnesota (7)
North Carolina State University (11)	University of Missouri (8)
Ohio University (2)	University of Nebraska (2)
Oklahoma State University (3)	University of Nevada-Reno (2)
Oregon State University (2)	University of North Carolina-Chapel Hill (4)
Portland State University (2)	University of North Carolina-Charlotte (2)
Purdue University	University of North Carolina-Greensboro
San Diego State University/UC-SD (5)	University of Northern Colorado (6)
Stanford University (2)	University of Pittsburgh (5)
Teachers College, Columbia University (4)	University of South Florida (4)
Texas State University-San Marcos (3)	University of Tennessee
The Ohio State University	University of Texas-Arlington
The Pennsylvania State University (5)	University of Texas-Austin (2)
University at Buffalo	University of Virginia (2)
University of Alberta	University of Washington (2)
University of Arizona (4)	University of Wisconsin (5)
University of California-Berkeley (4)	Vanderbilt University (2)
University of California-Davis	Virginia Tech (2)
University of California-Los Angeles	West Virginia University
University of California-Santa Cruz	Western Michigan University (2)

From 2010 to 2015 a total of 210 STaR Fellows have entered or completed the program. They are employed in 144 different institutions of higher education in 42 states, ranging from private liberal arts to public regional institutions to heavily research-oriented universities (Table 2, see next page). The 144 institutions are distributed across a wide range of Carnegie Classification. In fact, over half of the STaR Fellows (almost 60 percent) are faculty members in institutions that award doctoral degrees, as shown by the DRU, RU/H, and RU/VH in Table 3. Thus, the STaR Fellows find themselves in institutions with a wide range of expectations with regard to teaching, research, and service.

What do the STaR Fellows say about their STaR experience? The STaR program has led to many collaborations leading to joint work on

Table 3. A summary of the Carnegie Classification* of the institutions where STaR Fellows had their initial academic appointments.

Carnegie	Asso/Pub-U-MC	Bac/Diverse	Bac/A&S	MastersS	MastersM	MastersL	DRU	RU/H	RU/VH
#institutions	1	3	9	4	7	63	16	41	66
%institutions	0.5	1.4	4.3	1.9	3.3	30.0	7.6	19.5	31.4

*A complete description of the Carnegie Classification is available at carnegieclassifications.iu.edu/descriptions/basic.php

Table 2. Institutions where STaR Fellows were employed when they participated in the STaR Program.

Appalachian State University (2)	Rowan University
Arizona State University	San Diego State University
Arkansas State University	Sonoma State University
Auburn University	Southeast Missouri State University
Bemidji State University	Southern Methodist University (2)
Berry College (2)	Southern Utah University
Black Hills State University	St. John Fisher College
Boise State University	Teachers College, Columbia University
Boston College	Texas A&M University - Corpus Christi
Boston University (3)	Texas A&M University-San Antonio
Bowling Green State University (2)	Texas A&M-Commerce
Bridgewater State University	Texas Christian University
Brigham Young University	The College of New Jersey
Bucknell University	The Ohio State University
Buffalo State University of New York	The University of Texas-Pan American
Cal Poly University-San Luis Obispo	Towson University (2)
California Polytechnic University (2)	Tuskegee University
California State University, Chico (2)	Univ. of South Florida - Sarasota Manatee
California State University, Long Beach	University of Georgia
Central Michigan University	University of Alabama (3)
City University of New York-BMCC	University of Arizona (3)
Clemson University (2)	University of Arkansas
Colorado State University	University of Central Arkansas
Drake University (2)	University of Central Missouri (2)
East Carolina University (2)	University of Cincinnati (2)
Eastern Kentucky University (2)	University of Colorado, Denver
Fayetteville State University	University of Delaware (2)
Florida State University (2)	University of Denver
George Mason University	University of Georgia (2)
Georgia Southern University	University of Idaho
Georgia State University	University of Illinois at Chicago
Hood College	University of Illinois, Urbana-Champaign
Hunter College, CUNY	University of Indianapolis (2)
Illinois Institute of Technology	University of Kentucky (3)
Illinois State University (3)	University of Louisville
Indiana State University	University of Massachusetts, Amherst
Iowa State University	University of Memphis
Ithaca College	University of Mississippi
IUPUI (2)	University of Missouri (2)
James Madison University (2)	University of Missouri-St. Louis
Kansas State University	University of Montana
Keene State College (2)	University of Nebraska-Lincoln
Kennesaw State University (7)	University of Nevada, Las Vegas
Kent State University (2)	University of New Hampshire
Lehman College (CUNY) (2)	University of New Mexico
Longwood University	University of North Carolina-Chapel Hill
McDaniel College	University of North Carolina Wilmington
Metropolitan State College of Denver	University of North Florida
Miami University (2)	University of North Texas at Dallas
Michigan State University (2)	University of Northern Iowa (3)
Middle Tennessee State University (2)	University of Oklahoma
Midwestern State University	University of Pittsburgh
Millersville University (2)	University of South Carolina (5)
Montana State University-Bozeman	University of South Florida (3)
Montclair State University (4)	University of Southern Indiana
North American University	University of St. Thomas
North Carolina State University	University of Texas At San Antonio (2)
North Georgia College & State University (2)	University of Washington
Northern Arizona University	University of West Florida
Northern Illinois University	University of Wisconsin-La Crosse
Northern Kentucky University (2)	University of Wisconsin-Madison
Ohio University	University of Wisconsin-Stevens Point
Oregon State University (5)	Utah State University
Penn State Berks	Virginia Tech University (2)
Penn State Harrisburg	Washington State University (2)
Penn State University	Weber State University, Ogden, UT
Penn State University-Abington College	West Chester University (2)
Pepperdine University	West Virginia University
Portland State University	Western Washington University
Purdue University (3)	Westminster College
Rockhurst University	

teaching experiments, research projects, proposals for external funding, scholarly publications, and presentations related to various aspects of mathematics education. The feedback from each cohort of STaR Fellows has been positive, testifying to how the STaR experience has contributed to career growth. Here are several reflections offered by STaR Fellows:

“The STaR experience has provided me with the most powerful networking experience I have had so far in my career.”

“This experience was a gift. I needed this opportunity at this exact moment more than I need any other type of mentoring experience... I have direct advice from very wise mentors about how I should make decisions related to my work, and I have connections with like-minded, serious scholars who will continue this conversation with me for many years to come.”

As universities struggle to provide strong mentoring experiences for young faculty, the STaR program provides a focused experience for early-career mathematics educators. Several Fellows have commented on the power of the program in providing them such an experience that pays off well beyond the initial institute:

“There are moments in life when you know you are taking part in something great. I can honestly say that STaR was such an experience for me.”

“Many conferences and workshops provide opportunities to meet colleagues, develop relationships between institutions, craft works on research, and/or advance the profession of teaching. STaR stands apart because it does all of these things, but in a way that supports the development of junior faculty across various institutions with differing demands (both in terms of work and culture). It is a significant and critical contribution to our profession.”

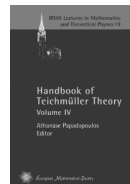
What is the future of the STaR Program? Just as Project NEXt has served mathematicians entering careers in higher education, the STaR Program has helped early-career mathematics educators address some of the challenges they face as they transition into their positions in higher education [2]. The success of the STaR Program encouraged the leadership to seek a permanent home within a professional organization that would allow the STaR Program to continue beyond NSF support, and the AMTE agreed to serve that role. Financial support for the program has come from private foundations, professional organizations, and many individuals, including STaR Fellows and AMTE members. Information about contributing to the STaR program is available at <https://amte.net/civCRM/contribute/transact?reset=1&id=13>.

In summary, each generation of scholars has a responsibility to help educate and prepare their successors in the discipline. The STaR Program

is an effort to help initiate the next generation of mathematics educators, providing support for them to develop networks that can help them launch and establish a productive career. We appreciate the vision of the National Science Foundation for supporting the establishment of the STaR Program and the commitment of AMTE for continuing the effort.

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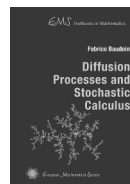


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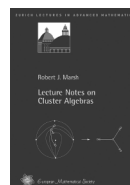


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