

# The STaR Program for New Doctorates in Mathematics Education is in its Second Decade

*Barbara Reys and Robert Reys*

In 2010 the first cohort of STaR Fellows gathered in Park City, UT. The program, now in its second decade, is designed as an induction experience for doctoral graduates in mathematics education who are in their first- or second-year appointment in an institution of higher education. It was initially modeled on Project NEXt, a successful program for mathematicians entering careers in institutions of higher education. The STaR Program was funded for its first four years by the National Science Foundation (Grant 0922410), but thanks to continuing contributions from individuals and philanthropic groups, it continues under the oversight of the Association of Mathematics Teacher Educators (AMTE). This article provides an update on the program that derives its name (STaR) from the important work of higher education faculty in mathematics education: Service, Teaching and Research.

The STaR Program is intended to serve as many new mathematics educators in higher education as possible. However, there are generally more applicants that can be accommodated – about 25–35 people each year. Participants are about equally distributed between those with academic appointments in mathematics departments and

colleges/schools of education. Originally the STaR Program coincided with the Park City Mathematics Institute so that some speakers and experiences could be shared. The STaR Program continues to meet for one week annually in Park City, except in 2020 and 2021 when it was done remotely.

**What happens during the STaR institute?** Prior to the five-day institute, selected participants 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. Teaching interests/responsibilities include courses (content and/or methods) for elementary, middle, or secondary teacher education candidates (undergraduate and graduate level).

The summer institute consists of plenary sessions on teaching, research, and service that are led by a staff of experienced mathematics educators. In addition to the plenary sessions, special interest groups are established that focus on research and teaching. For example, participants 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 allow STaR Fellows to meet with other mathematics educators sharing similar research interests and goals. The work of these groups often results in STaR Fellows designing and conducting joint research efforts across multiple institutions, and sometimes this work evolves into proposals for funding to support their collaborative research.

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Each participant also shares at least one of their academic manuscripts with other participants and staff. These manuscripts are then reviewed and discussed within a small cohort group, providing valuable feedback. Continued work on these manuscripts has resulted in many scholarly publications by the STaR Fellows, some of which are coauthored with other STaR Fellows.

Fireside Chats are optional informal conversations hosted by experienced mentors/staff about topics of current interest and held during specified times outside of the Research, Teaching, and Service-related sessions they all attend. Fellows can choose among different available chats to attend or can do their own thing during these times. There is also free time during the institute that allows for continued interaction among Fellows 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 STaR Fellows work in isolation at their home institution (e.g., they may be the only mathematics educator in their department). Fellows also meet at the next annual meeting of AMTE following the institute, providing additional opportunities for networking and collaboration.

The STaR Program is designed and delivered by senior faculty members in mathematics education, usually led by co-organizers. In addition to the co-organizers, 3–5 other senior level mathematics educators serve as staff to mentor Fellows.

The success of the initial funding of the STaR Program by NSF served as a catalyst to build, launch, and establish the program. The commitment of AMTE to continue oversight of the program has allowed it to become established as part of the culture of the profession. STaR Program leadership has regularly changed to ensure that the STaR Program is vibrant and does not become dependent on one or two people. Table 1 reports the organizers that provided major leadership in shaping the experiences for the STaR Fellows.

**Where did the STaR Fellows graduate?** Since 2010, a total of 399 STaR Fellows have completed the program. These STaR Fellows earned their doctorate in mathematics education from 102 different institutions. The ten institutions producing the most STaR Fellows are shown in Table 2. STaR Fellows graduated from each of the Big 10 institutions and a total of 37 institutions that are members of the American Association of Universities (AAU). Most of the STaR Fellows earned their doctorate from AAU institutions.

**Where are the STaR Fellows employed?** STaR Fellows are employed in 247 different institutions of higher education across 45 states. The ten institutions hiring the most STaR Fellows are shown in Table 2. About 50 percent of the STaR Fellows are employed in mathematics departments. Nine STaR Fellows are now employed in private enterprise, K–12 school districts, or in institutions of higher education in other countries.

Year(s)	Co-Organizers
2010–13	Barbara & Robert Reys, University of Missouri
2014–15	Denise Spangler, University of Georgia; Jeff Wanko, Miami University
2016	Denise Spangler, University of Georgia; Karen Hollebrands, North Carolina State University
2017	Karen Hollebrands, North Carolina State University; Jeffrey Shih, University of Nevada-Las Vegas
2018	Jeffrey Shih, University of Nevada-Las Vegas; Keith Leatham, Brigham Young University
2019	Keith Leatham, Brigham Young University; Beth Herbel-Eisenmann, Michigan State University; Marta Civil, University of Arizona
2020	Beth Herbel-Eisenmann, Michigan State University; Marta Civil, University of Arizona; Maria Fernandez, Florida International University
2021	Maria L. Fernandez, Florida International University; R. Judith Quander, Houston University
2022	R. Judith Quander, Houston University; Mathew Felton-Koestler, Ohio University
2023	Mathew Felton-Koestler, Ohio University; Dorothy White, University of Georgia

**Table 1.** Leadership organizers for the STaR Program.

Table 3 shows the Carnegie Basic Classification of institutions of higher education in the United States where the STaR Fellows are currently employed. More specifically, Table 3 shows that slightly over one-half of the STaR Fellows are employed in doctoral granting institutions, and about 40 percent are employed in regional institutions offering a range of degrees.

**How to become a STaR Fellow?** The current application process requires a vita, a letter of recommendation from the applicant’s doctoral advisor, a letter of support from current department chair or dean, and a personal statement describing current work and how participation in the STaR Program will advance their career. The complete application process is on the AMTE website at <https://amte.net/star/apply>.

## EDUCATION

Institutions graduating the most STaR Fellows from 2010–2022	#	Institutions employing the most STaR Fellows	#
Michigan State University	24	University of Alabama	8
University of Georgia	24	North Carolina State University	7
North Carolina State University	19	Kennesaw State University	7
University of Missouri	16	University of Northern Iowa	7
University of California, Berkeley	13	Georgia Southern University	6
Indiana University	12	Appalachian State University	5
Stanford University	11	East Carolina University	5
University of Delaware	11	University of South Carolina	5
Illinois State University, University of Michigan, University of Northern Colorado	9	Georgia Southern University, Iowa State University, James Madison University, Montclair State University	4
San Diego State University, University of California, San Diego	9	San Diego State University, Texas State University, University of Nebraska, West Chester University	4

**Table 2.** The ten institutions graduating the most STaR Fellows and the ten institutions employing the most STaR Fellows.

**How is the STaR program currently supported?** NSF funded the first four years of the program producing 150 STaR Fellows. Since that time, a four-part strategy has been used to continue support of the program:

- Administrative/organizational oversight facilitated by AMTE.
- Donations from a variety of professional organizations (state, regional, and national), foundations and companies.
- Donations from individual members of the mathematics education community, including STaR Fellows and mid- and senior-level faculty.
- Travel support to attend the summer institute is provided by the home institution of each Fellow.

Carnegie Basic Classification of Institutions	#	%
Doctoral Universities: Very High Research Activity	127	32.6
Doctoral Universities: High Research Activity	86	22.1
Doctoral/Professional Universities	40	10.3
Master's Colleges & Universities: Larger Programs	87	22.3
Master's Colleges & Universities: Medium Programs	12	3.1
Master's Colleges & Universities: Small Programs	12	3.1
Baccalaureate Colleges: Diverse Fields	11	2.8
Baccalaureate Colleges: Arts & Sciences Focus	10	2.6
Baccalaureate/Associate's Colleges: Mixed Baccalaureate/Associate's	1	0.0
Associate's Colleges: High Transfer-Mixed Traditional/Nontraditional	4	1.0

**Table 3.** Percent of the 390 STaR Fellows currently employed in institutions of higher education reflecting their Carnegie Basic Classification.

The organizations/foundations/companies that have supported the STaR Program include: American Statistical Association (ASA); AERA Special Interest Group/Research in Mathematics Education (SIG/RME); Brookhill Foundation/Mathematics Institute of Wisconsin; Connected Mathematics Project/Michigan State University; College Preparatory Mathematics; Educational Advancement Project; National Council of Teachers of Mathematics (NCTM); Psychology of Mathematics Education-North America (PME-NA); and state organizations including the Association of Mathematics Teachers Educators-Texas (AMTE-TX); Association of Maryland Mathematics Teacher Educators AMMTE; Georgia Mathematics Teachers Educators (GAMTA); Kentucky Association of Mathematics Teacher Educators (KAMTE); Michigan Association of Mathematics Teacher Educators (MI-AMTE); Mississippi Association of Mathematics Teacher Educators (MAMTE); Pennsylvania Association of Mathematics Teacher Educators (PAMTE); Hoosier Association of Mathematics Teacher Educators

(HAMTE); and the Utah Association of Mathematics Teacher Educators (UAMTE). For those interested in providing support for the STaR Program, see: <https://amte.net/civicrm/contribute/transact?reset=1&id=13>.

**What is the future of the STaR Program?** Each generation of scholars in a discipline has a responsibility to help educate and prepare their successors in the discipline – to serve as stewards of the discipline (3). The STaR Program is an effort to help initiate the next generation of mathematics educators in institutions of higher education, providing support for them to develop networks that can help them launch and establish successful and productive careers. We appreciate the vision of the National Science Foundation for supporting the establishment of the STaR Program, the many groups that have provided financial support, the mathematics educators that have served as organizers and institute staff, and the commitment of AMTE for continuing the effort. Donations, along with continued service through leadership of the program, will ensure the continuation of a vibrant, successful, and remarkably far-reaching induction program for higher education faculty in mathematics education.

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Robert and Barbara Reys

**Credits**

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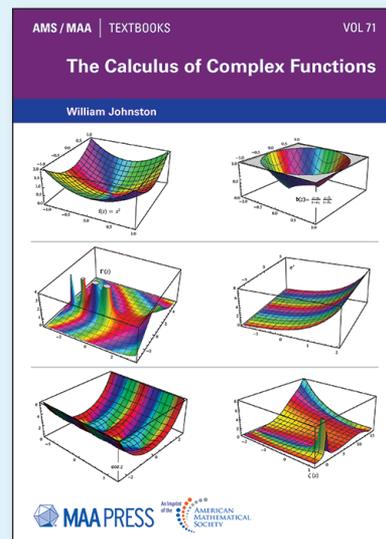
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