

A Proven Strategy to Improve Funding Success Rates for Two-Year Colleges Seeking Grants from the National Science Foundation Advanced Technological Education Program

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Abstract

Too few two-year technical and community colleges pursue funding from the National Science Foundation (NSF). Instead, they tend to rely on the U.S. Department of Education or the U.S. Department of Labor for federal grants. From the way grant funding opportunities are announced, to the processes used in reviewing proposals and making funding decisions, to the policies and procedures that govern submission of proposals and implementation of grants, NSF operates differently from other federal funding agencies that make grant awards. The Advanced Technological Education (ATE) Program is unique within NSF because of its focus on two-year colleges and workforce development, specifically for those who complete for-credit programs of study and earn credentials that enable program completers to enter the skilled technical workforce. NSF expects faculty to be involved in developing proposals and implementing projects funded by the agency. Meeting this expectation requires a paradigm shift for many community and technical colleges where the primary emphasis is on teaching and where there is seldom any expectation that faculty will contribute to college efforts to secure external funding from federal sources. In addition, in 2021, the overall NSF funding rate was 26% which presents daunting odds for success. However, 10 years of research demonstrate the effectiveness of an intervention that dramatically increases the funding rate for two-year colleges seeking funding from the NSF ATE Program. Since 2012, the Mentor-Connect initiative has been funded by the NSF ATE Program to help two-year college technician educators and related STEM faculty develop the grant-writing skills needed to meet NSF expectations and benefit from ATE funding. Over the past decade, 80% of Mentor-Connect participants have successfully submitted proposals. To date, the average funding rate for these proposals is 71%.

This paper describes how the Mentor-Connect intervention works and for whom, what outcomes have resulted for participants who become grantees, and how two-year colleges and technician educators can benefit.

Funding Program History

The Advanced Technological Education (ATE) funding program at the National Science Foundation (NSF) was created in 1992 by what is referred to as the SATA legislation, the Scientific and Advanced Technology Act [1]:

Scientific and Advanced-Technology Act of 1992 - Requires the Director of the National Science Foundation (NSF) (the Director) to carry out a national advanced technician training program of awarding competitive grants to accredited associate-degree-granting colleges which can provide competency-based technical training in advanced-technology occupational fields.

The first awards for this new funding program were made in 1993. Nearly 20 years later, employer demand for highly-skilled technicians continued to exceed the supply, while too few two-year colleges were benefiting from NSF ATE program funding to enhance technician

education programs. At the start of the ATE Program, a preliminary proposal review option was offered to all prospective grantees. A prospective grantee had the option to submit a draft proposal to NSF for review by a panel of peers. This preliminary review process mirrored the peer review process that NSF routinely uses to evaluate proposal submissions. Feedback from the preliminary review was provided to the prospective grantee several months prior to the proposal submission deadline, so that project plans could be strengthened and errors eliminated to help the prospective grantee craft a more competitive final proposal. However, in about 2010, NSF discontinued the preliminary review option. One result of this change was that over time, a limited number of colleges who were capable of and had become proficient in crafting and submitting competitive proposals received additional awards while those attempting proposals for the first time were less successful.

At the 20-year mark of the ATE Program, only about one-third of the nation's approximately 1,800 technical and community colleges (hereafter referred to as two-year colleges) had received an NSF ATE funding award. Lack of experience with this source of funding resulted in many requests being directed to NSF Program Officers and others for assistance related to grant proposal development. The absence of grant development support personnel (sponsored research offices) at most community colleges makes seeking NSF ATE grants a daunting task. Challenges for two-year colleges seeking NSF ATE funding are exacerbated by the fact that faculty leadership for these grants is expected, and faculty expertise and experience provides much of the intellectual merit of NSF grant proposals. However, two-year college faculty are rarely, if ever, incentivized or rewarded for taking the initiative to submit grant proposals to NSF. To change participation statistics and mitigate barriers facing two-year colleges in seeking NSF funding, the ATE Program has funded a series of large, special projects referred to collectively as Mentor-Connect. The Mentor-Connect intervention began in 2012 and is currently funded through 2027.

Broadening Participation

The initial Mentor-Connect project, *Mentor-Connect: Leadership Development and Outreach for ATE* (NSF DUE #1204463), funded in 2012, was designed to broaden participation of two-year colleges in the ATE Program. Following this first project, a series of Mentor-Connect projects (NSF DUE #1501183, #1840856, #2227301) have continuously built capacity within two-year colleges and leadership skills among their STEM faculty to support preparation of competitive grant proposals for the NSF ATE program. [2] Mentor-Connect is currently working with an 11th Cohort of prospective NSF ATE grantees. ATE supports Mentor-Connect to help ensure that two-year colleges have access to funding that will better enable these institutions to produce highly-skilled technicians in advanced technologies that drive the American economy.

Mentor-Connect services include instruction, mentoring, technical assistance, and a curated collection of digital resources to help potential grantees with the complexities of proposal development, proposal submission, and project implementation. Mentor-Connect cohort mentoring and other one-on-one mentoring services that are provided are limited to associate-degree-granting two-year colleges. However, four-year colleges and universities, as well as K-12 educators, may partner with a two-year college in developing a proposal for the Small Projects

for Institutions New to ATE funding track. The two-year college, however, must be the grantee institution. For all ATE funding tracks, two-year colleges and their faculty must provide substantial leadership for the project, and the proposal budget needs to reflect this significant involvement. [3]

Services for prospective grantees have expanded over time and are now available for four types of eligible prospective grantees: 1) colleges classified by NSF as new to ATE (two-year colleges that have not received an NSF ATE award in 7 or more years or ever), 2) new-to-ATE STEM faculty who have never been principal investigators for an ATE grant, 3) colleges/faculty teams seeking a larger second grant from the ATE Program after completing a small, new-to-ATE project, and 4) colleges/faculty teams whose first or second grant proposal submission to the NSF ATE Program was declined (not funded). Mentor-Connect recruits a team of four individuals from each college to work on proposals with an assigned mentor: two STEM faculty who will serve as Principal Investigator (PI) and Co-Principal Investigator (Co-PI) for the project, a grant writer/grant professional, and an administrator. Mentor-Connect data show that colleges that participate with a four-person team are more likely to submit a proposal and more likely to be funded than colleges that participate with a smaller project-development team.

Below are the strategies that have proven successful for two-year colleges and their faculty that have resulted in their participation and funding success in the NSF ATE Program. This approach has also proven to build institutional leadership and capacity for crafting successful NSF proposals beyond the first grant award. Most instruction and guidance that Mentor-Connect provides applies to preparation of competitive proposals for any NSF Program in the Division of Undergraduate Education; however, Mentor-Connect places particular emphasis on requirements that are specific to the ATE Program.

Strategies

Mentor-Connect employs a problem-based learning strategy augmented by one-on-one mentoring and on-line technical support in teaching faculty how to prepare competitive NSF ATE grant proposals. Learning-by-doing has an added advantage of developing leadership skills among STEM faculty pursuing these grants. The mentoring for grant development has been guided by an IBM-developed industry mentoring standard for leadership/talent development which was proven to foster and nurture a pipeline of capable future leaders [4]. Mentoring, which is integral to the Mentor-Connect project, contributes to leadership development for STEM faculty whose students are enrolled in technician education programs that are critical to national security and prosperity.

Through Mentor-Connect, new educators have been brought into the system, professionally developed through the process of designing and implementing projects to improve technician education, and mentored by those with years of experience in crafting successful ATE grant proposals. This paper explores the Mentor-Connect intervention, now in its 11th year, outcomes that have resulted and for whom, and the opportunity Mentor-Connect represents for two-year college advanced technology programs and associated STEM educators.

The Mentor-Connect system has three major components, using both high-touch (person-to-person) and high-tech (online, technology-facilitated) delivery strategies. The system works annually to 1) attract and prepare a new, diverse cadre of ATE Principal Investigators from two-year colleges and geographic regions not yet participating in the program, 2) transfer knowledge from experienced PIs to less-experienced prospective grantees or new grantees, and 3) prepare experienced ATE PIs to serve as peer-mentors for less experienced colleagues. The process addresses multiple facets of project development and management to grow leadership skills among new PIs.

Participant Recruitment

The initial objective of Mentor-Connect was to attract and assist faculty from new-to-ATE two-year colleges that qualify for Small Projects for Institutions New to ATE, a separate funding track in the ATE program. The small-grants track is designed to serve as an entry point for ATE funding. To be eligible for this funding track, an institution must be a two-year college with no previous NSF ATE funding or whose previous ATE grant was awarded seven or more years ago. Colleges applying to this funding track only compete against others in the same track. All other ATE funding tracks accept proposals from a variety of organizations seeking grant funding. Proposals submitted to all other ATE funding tracks may be from those who have received previous ATE awards or from those who are new to ATE. There is an expectation, however, that those seeking a larger ATE awards – especially ATE Centers which represent ATE's largest investments – will be building on previous work and success as ATE grantees. While the focus of the ATE Program is on two-year colleges, NSF ATE accepts grant proposals from many types of organizations and does not limit the number of concurrent ATE awards an organization may receive. ATE encourages grantees to seek additional funding from the program. Multiple proposals may be submitted in the same year or in sequential years. There is no requirement that a previously-funded project be completed before submitting another proposal. In addition, if a two-year college previously received an ATE grant award, and the date of the previous award was seven or more years ago, the institution is once again eligible for the special Small Projects for Institutions New to ATE funding track. The ATE Program typically publishes a new solicitation every three years. The solicitation fully describes the program, funding opportunities, and requirements that include the proposal due date for each year, which is always in October and usually the first Thursday of the month.

A partnership with the American Association of Community Colleges (AACC) has facilitated the distribution of information about the NSF ATE Program and available assistance for those who wish to seek funding from the program. A key contact at AACC has served in a leadership role in each Mentor-Connect project. AACC's print and on-line communications, which are distributed to the organization's approximately 1,800 two-year college members, have routinely included NSF ATE and Mentor-Connect program information along with success stories and human-interest articles to attract participants. A key factor in the success of this strategy has been contracting with a professional writer who has in-depth knowledge of the NSF ATE Program along with an existing working relationship with AACC for submission of articles for potential publication by the organization. In-person outreach augments print and online information

dissemination. Project personnel regularly speak at annual conferences that attract STEM faculty; e.g., American Society of Engineering Education (ASEE), High Impact Technology Exchange Conference (HI-TEC), and League for Innovation. In addition, workshops have been delivered and presentations made at state-wide conferences; e.g., South Carolina Technical Education Association, Virginia Community College System New Horizons Conference, and North Carolina Community College System conferences such as the North Carolina Computer Instructors Association (NCCIA) Conference. Partnerships with the Council for the Advancement and Support of Education (CASE) and ATE-funded Centers provide targeted outreach opportunities by including Mentor-Connect speakers at their seminars, workshops, and conferences. CASE has a two-year college division that offers programming specifically for two-year college grant professionals. Mentor-Connect uses its own interactive website, www.Mentor-Connect.org, email blasts, and various social media tools (LinkedIn, Facebook, Twitter) to reach educators who may benefit from participation. In 2022, applicants (25 teams) were asked how they learned about Mentor-Connect. Most impactful for recruitment of new participants was referral or advice from a colleague or friend (6/30%) followed by presentations via webinar and email (each 5/20%). Conference workshops attracted 3 applicants (12%). The Mentor-Connect website/web search and referral from another mentoring initiative each attracted two applicants (10%). One applicant (5%) was referred by an NSF Program Officer. Beginning in 2023, the annual cohort size was increased from 20 to 24 colleges per year. For 11 years, the project has successfully filled each cohort.

Knowledge Transfer through Mentoring

Mentoring is an effective way to transfer knowledge from those with more experience to those who have less (or no) experience. As explained in the initial funded proposal that launched Mentor-Connect in 2012 (NSF DUE #1204463) [2]:

Why organized mentoring for ATE?

“Mentors are guides. We trust them because they have been there before. They embody our hopes, cast light on the way ahead, interpret arcane signs, warn us of lurking dangers, and point out unexpected delights along the way.” [5]

“Research has documented the importance of having an organization-sponsored mentoring effort in place as part of the successful recruitment of new talent [4].”

“Retention as a part of talent management must also be about the retention of critical knowledge within the organization [6].”

The past two decades have witnessed an explosion of interest across a variety of organizations, disciplines, demographic segments, and professions on the topic of mentoring and documenting the effectiveness of mentoring in improving work outcomes and stimulating leadership development in all fields [7]. In educational environments and academic settings, mentoring is a highly successful and often necessary approach to creating change that goes “beyond the transmission of knowledge and experience...generates a pervasive network to create learning... and, the impact of leadership mentoring on the education system in influencing school leaders is substantial, over and beyond the period of its structured implementation [8].” Mentor-Connect will have the long-term effect of creating a collegial and networked

environment that increases the number of competitive proposals from first-time PIs who have become educated and integrated into a community of educators long before the submission of their first proposal as well as improve the success of mentored projects. The networked, peer mentoring approach proposed by Mentor-Connect will be a key component to increasing the diversity (demographic and geographic) of PIs and colleges submitting proposals to the ATE Program. Mentoring also helps transcend informational barriers and provides networks of support and connections to other professionals in the field which have been found to be key components for success, especially for women and minorities. Carla Hymowitz points out that “mentoring is important, if not crucial, in helping women and minorities, to reach the top ranks in organizations [9].”

Mentor-Connect utilizes a cadre of mentors each year to work with teams of prospective ATE grantees. Mentors may serve more than one year. Mentors are typically assigned two teams of prospective grantees per application cycle. From an initial cadre of 10 mentors in 2012, the roster of mentors has grown to 44. In 2017, a new Mentor Fellows Internship Program was launched to prepare those experienced in the ATE Program to become mentors, thereby increasing mentoring capacity for Mentor-Connect and the ATE Program. Mentor Fellows interns engage in all Mentor-Connect programming for a year, participate in special leadership development activities, and shadow experienced mentors as they each work with two teams of prospective ATE grantees. Mentor Fellows are supported with stipends and receive travel support to attend the project’s two annual, in-person workshops. Since 2017, 25 Mentor Fellows have completed the internship, and four new Mentor Fellows are working with Mentor-Connect in 2023. Successful completion of the internship makes participants eligible to serve as mentors in the next or a subsequent year. As new mentors are brought into the cohort mentoring system, in rotation, experienced mentors are transitioned to mentoring assignments with other types of prospective ATE grantees; i.e., those who are either moving up to larger ATE projects or are re-working declined proposals for resubmission. A rotation of mentoring talent enables newly-prepared mentors to gain experience working with prospective grantees while keeping more experienced mentors engaged and contributing in meaningful ways.

Mentors are paired with teams in November each year following the November application deadline for mentee teams. One or more Water Cooler Chats conducted with Zoom technology are used to orient and update mentors for the coming year. Each December, the mentoring process begins with three activities: initial mentor-mentee contact, a Virtual Kickoff for the upcoming Winter Workshop, and a “homework” questionnaire related to their proposed project. Thereafter, mentors meet with their teams at regularly scheduled times over the following nine months, never less than once each month. To maximize faculty engagement and support leadership development, mentee teams are responsible for arranging and hosting the virtual meetings using a platform of their choice, e.g., Zoom or Microsoft Teams. Four-member college teams are encouraged, and mentors work with the entire team. Teams ideally consist of two STEM faculty who will serve as PI and Co-PI for the grant proposal, a grant writer/professional, and a college administrator. The administrator is typically someone

with a particular interest in or responsibility for the focus area selected for an ATE project proposal. In some cases, particularly in smaller two-year colleges, one individual will fill both grant writing and administrative roles. Teamwork has been identified as a success factor for prospective grantees. Project data reflect the value of four-person grant development teams. When a grant professional and an administrator engage in project workshops and work with the faculty to prepare a proposal, that proposal is more likely to be submitted and also more likely to be funded than is the case when faculty do not have this support.

The mentors and mentee teams meet one another virtually in December to become acquainted and discuss expectations for working together. This initial meeting may occur before or after the Kickoff webinar.

The Kickoff webinar serves as an introduction to the Mentor-Connect project and its leadership team. Information is provided about the cohort, project expectations, grant funding, and NSF ATE Program priorities in order to lay a foundation for grant development instruction, which is the focus of the Winter Workshop.

Participant teams are also provided with a “homework” questionnaire to complete about their programs and local demand for technicians. Completion of this assignment requires data collection tasks designed to help faculty focus their project on documented needs. Mentors discuss this assignment with them in preparation for mentor-mentee work time at the Winter Workshop.

Instruction and Technical Assistance

Instruction and technical assistance are provided by in-person workshops, webinars, tutorials and other on-line resources, and a Help Desk. Webinars are updated annually, presented live, recorded, and made available in the project’s on-line, searchable resource repository. Tutorials are developed as annotated presentations that provide quick access to specific topics covered in each webinar.

The first of two in-person workshops, the Winter Workshop, is held each year for the new cohort in late January or early February. The Winter Workshop begins with a half-day preparatory meeting with mentors, followed by a two-day workshop for participants spread over three days. Program Officers from NSF who work in the ATE Program attend and assist with the program. Participants receive a Grant Writing Guide that includes such items as proposal development worksheets, timeline templates, a guide to using the Mentor-Connect searchable Resource Repository, and a glossary of NSF acronyms that may be useful during proposal development. Also included is a quiz on the Program Solicitation to allow participants to assess how carefully they have read and understood this guiding document. Participants are also provided with two ATE proposals to read in advance of the workshop. This enables faculty to actively participate in a Mock Panel Review activity that mimics the NSF panel review process. Panel reviews are the first step in the NSF proposal review process and guide funding recommendations. At the Winter Workshop, participants are provided with grant development instruction. Topics discussed and workshop activities include the following:

- Overview of the Mentor-Connect System
- ATE Solicitation and NSF Proposal & Award Policies & Procedures Guide (PAPPG)
- Project Ideation
- Logic Models
- Components of an ATE proposal
- Mock Panel Review (faculty review and rate actual ATE proposals)
- Break-out session for administrators and grant professionals
- Helpful Hints and Fatal Flaws for proposal development
- Institutional Review Board (IRB) requirements
- Collaborations
- Timelines, barriers, and challenges
- Transforming goals into a work plan
- Developing and delivering an elevator speech for a project
- Maintaining momentum for successful proposal submission

Since some components of NSF proposals involve numerous details and specific requirements, the topics are introduced at the Winter Workshop and then supplemented by detailed instruction that is provided via technical assistance webinars. These webinars are offered in each of the three months following the Winter Workshop. Technical assistance webinars include, but are not limited to, developing and submitting budgets and budget justifications, requirements for completing proposal forms, and project evaluation.

During each workshop day, mentor-mentee work time is interspersed with grant development instruction. This dedicated time for in-person, one-on-one work with a mentor without normal work-day distractions has been central to the success of participants. The Winter Workshop concludes with each college team delivering a two-minute elevator speech on their project to all workshop participants.

The Summer Workshop is a one-day event held in late July, one day before HI-TEC and in the same location. HI-TEC is hosted each year by ATE grantees and thus introduces prospective ATE grantees to technician educators within and beyond the ATE Community in addition to providing professional development in advanced technological education. Summer Workshop instruction includes final proposal checklists, submission guidelines, and development tips as well as advice provided by a panel of recent Mentor-Connect participants who have become ATE grantees. As with the Winter Workshop, the program also includes dedicated mentor-mentee work time.

Following the proposal submission deadline in October, a webinar entitled “What to Expect When You Are Expecting ...to Hear from NSF” is provided to all teams who submitted proposals. This webinar helps prospective grantees understand the NSF proposal review process, award-making procedures, and typical timelines for receiving grant awards or declined-proposal notifications. As teams are contacted by NSF about their proposals, these prospective grantees are offered one-on-one advice to help them navigate the NSF funding process. Mentor-Connect

also provides resources and guidance for new grantees on project start-up and navigating the first year of project implementation.

Participant Intake and Support

Applications for all mentoring services are available on the www.Mentor-Connect.org website under the “Get a Mentor” tab on the homepage. The application deadline is the second Friday in November of each year. Applications for other one-on-one mentoring services are also located under the “Get a Mentor” tab, and these applications are due April 1 or on a rolling deadline depending on the type of request. The application for a Mentor Fellows Internship is due the second Friday in November and may be found under “Be a Mentor.”

A hallmark of Mentor-Connect is personal service and responsiveness for all prospective grantees and new grantees. These ongoing support services are provided via a Help Desk, webinars and other technical assistance, and frequent communication. All services are augmented by a searchable, curated resource repository of approximately 200 documents, videos, webinars, and tutorials developed or selected specifically to support those engaged in ATE grant proposal development and project implementation. The resource repository is dynamic, and all materials are reviewed and updated annually as changes occur in the ATE Solicitation, the PAPPG, or at NSF. The Help Desk is staffed by those most qualified to answer questions. Help Desk responses are provided within 24 hours if not immediately. Emails known as “Tuesday Reach-outs” are sent weekly to all participants to provide information and encouragement throughout the proposal development cycle.

In addition to participant services, Mentor-Connect provides travel support for all team members to attend the two in-person workshops each year. Following the proposal submission deadline in October, each participating faculty member is eligible for a stipend payment that is pro-rated based on participation. Those who fully participate and submit a grant proposal are eligible for the maximum stipend payment. Mentors working with prospective grantees through any of Mentor-Connect mentoring services also receive stipends, and those who are engaged in cohort mentoring receive travel support to in-person workshops.

For the in-person Summer Workshop, in addition to reimbursing travel costs, Mentor-Connect provides HI-TEC registrations for two faculty (or one faculty member and the grant professional or administrator on their grant development team) to participate in the two-day HI-TEC conference that immediately follows the one-day Mentor-Connect Summer Workshop.

Outcomes

The Mentor-Connect project has succeeded in raising interest and broadening participation in the NSF ATE program. To date, 234 new-to-ATE two-year colleges or colleges participating with new-to-ATE faculty have participated in cohort mentoring. Participants have come from 42 states and two US Territories (Puerto Rico and American Samoa). Consistently, more than 80% of participating teams submit proposals. The funding rate for the first 10 cohorts for whom funding decisions are known at this time is 71%; whereas published funding rates for NSF overall are as follows:

Table 1: Number of NSF Competitive Proposals, New Awards, and Funding Rates [10]

Fiscal Year	Competitive Proposals	Awards	Funding Rate (percent)
FY 2017	49,425	11,456	23%
FY 2018	48,336	11,717	24%
FY 2019	41,033	11,252	27%
FY 2020	42,726	12,171	28%
FY 2021	43,617	11,349	26%

In addition to those new to ATE, awards have been received by 22 additional two-year college teams that have worked with Mentor-Connect to develop and submit larger ATE Project proposals. Ten teams whose initial proposals were declined also received funding awards after working with Mentor-Connect to revise and resubmit their initial proposals.

Mentor-Connect is contributing to racial/ethnic diversification of the ATE Program. Mentee Colleges to date include 63 Hispanic-Serving institutions, four two-year institutions classified as historically black colleges and universities (HBCUs), and one tribal college. Based on ATE Annual Survey data, Mentor-Connect faculty participants (prospective grantees) are more diverse than ATE PIs (current grantees). Mentor-Connect faculty who become PIs or Co-PIs are 60% non-white/40% white; whereas ATE Survey results indicate that ATE PIs overall are 82% white/18% non-white. The gender balance for Mentor-Connect faculty participants to date is 45% female vs. 41% female ATE PIs based on an annual ATE Survey that is conducted on behalf of the NSF ATE Program by EvaluATE, Western Michigan University [11].

Conclusions

The system developed and implemented through a series of Mentor-Connect projects has substantially increased the involvement of two-year colleges in the ATE Program. Through Mentor-Connect participation, those who are new to ATE gain the essential knowledge and skills necessary to prepare and submit competitive proposals that most often result in grant awards. A Mentor Fellows internship program is effectively preparing mentors to increase capacity for assisting prospective grantees. Outreach strategies have proven effective in filling each Mentor-Connect cohort with diverse, new-to-ATE prospective grantees; which, in turn, results in more diverse ATE Principal Investigators. Those working with Mentor-Connect as they seek NSF ATE funding learn specifics and nuances of the NSF ATE program along with competitive proposal development strategies that increase their probability of funding success and lead to the advancement of technician education locally, regionally, and nationally.

Future Research

Two additions to the Mentor-Connect system are being pilot-tested in 2022-23. The impacts of these new services will be studied and the results reported in future papers. The first is a pre-cohort mentoring intervention that strengthens initial project ideas and occurs between the time a prospective-grantee application is reviewed and the start of the cohort mentoring program. The

second is a year-long course for first-time principal investigators, entitled “PI 101,” which provides instruction and mentoring support through the first year of project implementation.

Mentor-Connect mentoring services are accessed via an application process. For those who are preparing a new ATE proposal, the application requests a description of the project for which they will seek ATE funding. In some cases, initially proposed project plans include participants, activities, or proposed goals or objectives that are not consistent with NSF ATE Solicitation requirements. In previous years, a number of these applicants were not accepted into the cohort. When not accepted, consultation was offered to help them position the project plan for success in a future year. To avoid year-long delays for those seeking help and to add efficiency to the mentoring process, a new pre-mentoring intervention has been added. Beginning in fall 2022, when relatively minor adjustments could better align a project idea with ATE Program expectations, the applicant college was accepted into the cohort with the understanding that the project plan will be adjusted prior to beginning cohort mentoring.

The hypothesis is that this intervention and the resulting revised initial project plans will enable mentors to devote more time assisting teams with developing and strengthening a proposal vs. refining or changing the project idea. In previous years, mentors reported mixed success in redirecting project ideas to address program-alignment concerns and suggested that re-direction is needed before teams become too committed to their project goals and associated plans. For the pre-mentoring intervention, two highly-experienced ATE grant writers/Principal Investigators on the Mentor-Connect leadership team contacted eight of 25 Cohort 11 applicants to discuss the elements of their initial project idea where modifications could better align their proposal with ATE Program requirements and expectations. One team was not able to pivot to meet ATE expectations for their project and dropped out. The remaining seven teams that engaged in the pre-mentoring intervention are now participating in the cohort and are being tracked to assess the impact of the intervention on their subsequent mentoring experience and funding success. Outcomes will determine whether the pre-mentoring intervention will become part of the Mentor-Connect system of support for future prospective grantees.

The second addition to the Mentor-Connect system was added in recognition of the struggle that first-time PIs often have with the responsibilities of leading NSF ATE-funded projects. The learning curve for new PIs from two-year colleges is steep. The ATE Program’s only formal assistance for new grantees is provided by a half-day *Getting Started* workshop at the annual NSF ATE PI Conference in late October. ATE award notification and project start dates, however, occur months earlier. Also, due to time constraints, not all information about what a new PI needs to know and do can be covered in a single, four-hour workshop. PI 101 has been created to reinforce and augment instruction provided at the ATE PI Conference.

PI 101 is being launched in 2023 and consists of just-in-time multimedia support, one-on-one help, one-to-many Zoom sessions, and accompanying resources developed by experienced PIs, new grantees, mentors, and advisors. PI 101 is being offered throughout the year and includes synchronous and asynchronous virtual instruction, checklists and other resources, and a Help Desk.

The hypothesis is that if first-time PIs feel less overwhelmed when implementing their first grant-funded projects, they will be able to attain better outcomes from those projects and will be more likely to seek additional ATE grants in the future.

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