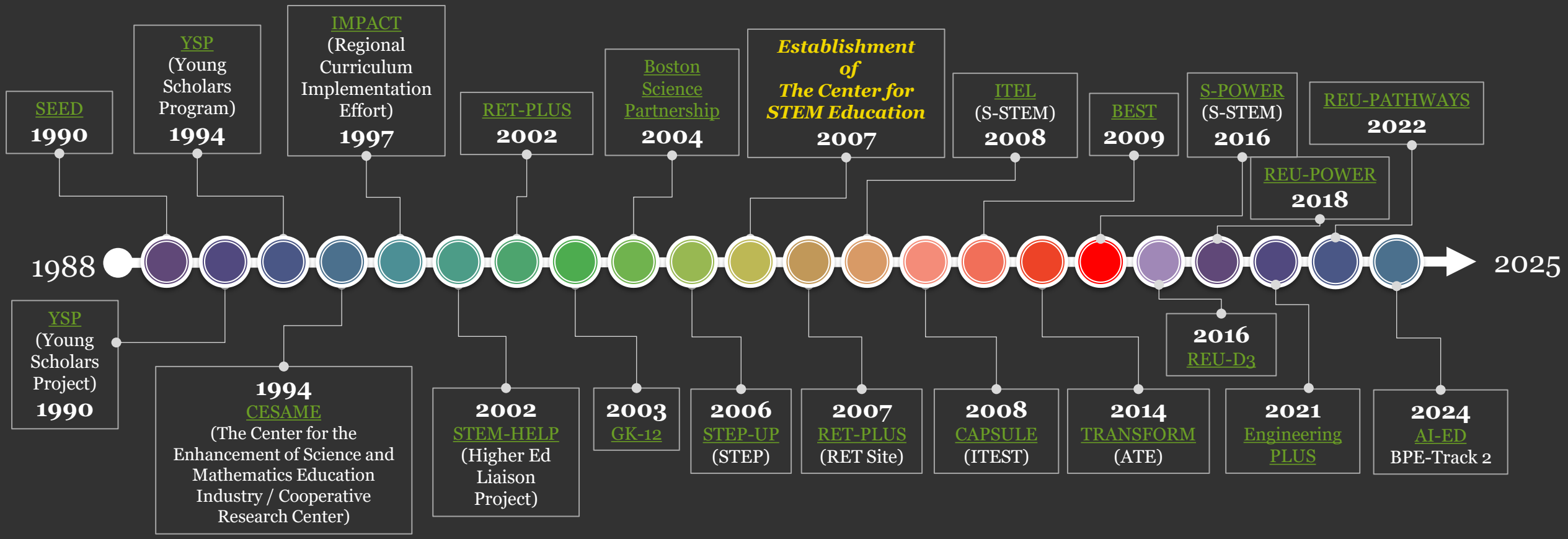
NSF-funded K14 Educational Efforts



Young Scholars Project (1990-1993)

Author(s): Claire Duggan
Institution: Northeastern University, Boston, MA

Abstract:
The Northeastern University, in cooperation with its College of Engineering and the Center for Electromagnetics Research, will initiate a six-week, commuter Young Scholars project in Engineering for 32 students entering grades 11,12. The program offers direct and sustained exposure to the challenges of engineering through laboratory research experiences, seminars, classwork, career exploration and field trips.

More information can be found here: http://grantome.com/grant/NSF/DRL-9055045

BACK TO TIMELINE

Project SEED (1990-1993)

Author(s): Michael Silevitch, Cristos Zahapoulos, Alan Cromer
Institution: Northeastern University, Boston, MA

Abstract (partial):
Project SEED is a 33 month program sponsored by Northeastern University to enhance middle level science teachers' use of experiments, demonstrations and projects in their classes. It is based on the well-established notion that an understanding of the basic concepts requires extensive prior experience with concrete examples of these projects. Working with an advisory group of science supervisors and coordinators from both urban and suburban Boston-area schools, a comprehensive program has been developed to train teachers to incorporate demonstrations and experiments into their individual teaching styles. The principal component of Project SEED is a four-week summer program, held for two summers, which involve workshop sessions, seminars and field experiences.

More information can be found here: http://grantome.com/grant/NSF/DRL-9050359

BACK TO TIMELINE

Young Scholars Program (1994-)

Author(s): Claire Duggan
Institution: Northeastern University, Boston, MA

Abstract:
Northeastern University will initiate a six-week, commuter, Young Scholars Project in engineering for 26 students entering grades 11 and 12. The program provides classroom instructions, field trips, hands-on laboratory activities, and an opportunity for students to have significant laboratory research experiences by engaging in the state-of-the-art research projects under the supervision of scientists and engineers in research laboratories in the College of Engineering at Northeastern University.

More information can be found here: http://grantome.com/grant/NSF/DRL-9452701

NSF-funding provided from 1994-1997. The program was resurrected in 2004 and has run every summer since then (using individually NSF-funded faculty research labs): NEU YSP

BACK TO TIMELINE

CESAME (1994-1997)

Author(s): Michael Silevitch
Institution: Northeastern University, Boston, MA

Abstract (partial):
This award provides funding for a three year continuing award to support the Industry/University Cooperative Research Center for the Enhancement of Science and Mathematics Education (CESAME). This Center, organized within the framework of the I/UCRC model, is a multi-sector partnership of federal, state, private foundation, and industry partners. CESAME enables K-12 elementary and secondary teachers in the State of Massachusetts to design and implement their own innovative ideas of teaching science and mathematics to children. CESAME is concerned with fostering projects conducted by teachers concerned with enhancing K-12 education.

More information can be found here: http://grantome.com/grant/NSF/IIP-9419540

BACK TO TIMELINE

IMPACT (1997-2004)

Author(s): Michael Silevitch, Claire Duggan, Margaret Bondorew, Marilyn Decker
Institution: Northeastern University, Boston, MA

Abstract (partial):
This project creates a widespread implementation capacity for the use of standards-based curricula in the New England region. The project builds from the work initiated by the Project for the Enhancement of Science and Mathematics Education (CESAME) at Northeastern University.

More information can be found here: http://grantome.com/grant/NSF/DRL-9730138

BACK TO TIMELINE

RET-PLUS (2002-2007)

Author(s): Claire Duggan, Charles DiMarzio
Institution: Northeastern University, Boston, MA

Abstract:
This award provides funding for a three year continuing award to support a Research Experiences for teachers (RET) Site, at Northeastern University, entitled, "Research Experiences for Teachers-A Program Linked to Urban Schools (RET-PLUS). This program will be conducted by the Center for the Enhancement of Science and Mathematics Education (CESAME), in collaboration with the Center for Subsurface Sensing and Imaging Systems (CenSSIS), and Engineering Research Center. The program will provide a six-week summer research experience for ten urban middle and/or high school math and/or science teachers and one undergraduate education student.

More information can be found here: http://grantome.com/grant/NSF/EEC-0227577

BACK TO TIMELINE

STEM-HELP (2002-2004)

Author(s): Paul Hickman, Alida Frey, Mark Kaufman
Institution: Northeastern University, Boston, MA

Abstract:
Project Impact at Northeastern University and the Eisenhower Regional Alliance at TERC propose a design project to create a customized technical assistance plan for higher education disciplinary and education faculty that focuses on curriculum use along with the professional development models required for successful implementation. It is anticipated that these activities will result in more effective provision of services by higher education faculty to teachers and schools in the MSP projects. It is also anticipated that faculty would incorporate the use of STEM materials and professional development modules into their pre-service teaching.

More information can be found here: http://grantome.com/grant/NSF/DRL-0233393

BACK TO TIMELINE

GK-12 PLUS (2003-2010)

Author(s): Thomas Gilbert, David Blackman, Claire Duggan, Jean Krasnow
Institution: Northeastern University, Boston, MA

Abstract (partial):
The NU GK-12-PLUS project will continue the Fellows program at Northeastern, incorporate lessons learned from the first round, share the knowledge gained from the program with the faculty concerned with improving graduate and undergraduate education, and institutionalize the program within the University. We will follow the participants over time to assess the impact of the work in order to find out how students best acquire facts, content and skills in a variety of learning situations.

More information can be found here: http://grantome.com/grant/NSF/DGE-0338255

BACK TO TIMELINE

Boston Science Partnership (2004-2013)

Author(s): Hannah Sevian, Robert Chen, Arthur Eisenkraft, Cristos Zahopoulos, Pamela Pelletier, Marilyn Decker
Institution: University of Massachusetts Boston, Dorchester, MA

Abstract (partial):
The Boston Science Partnership (BSP) is comprised of the following core partners: the Boston Public School (BPS) System, Northeastern University (NEU) and the University of Massachusetts Boston (UMB), as the lead organization. The Harvard Medical School and the College Board participate as supporting partners. This Partnership comes together to significantly enhance student achievement and teacher quality in grades 6-12 science.

More information can be found here: http://grantome.com/grant/NSF/DRL-0412390

BACK TO TIMELINE

STEP-UP (2006-2014)

Author(s): Christos Zahopoulos, Thomas Cullinane, Mohamad Metghalchi, Claire Duggan, Yiannis Levendis
Institution: Northeastern University, Boston, MA

Abstract (partial):
The Science, Technology, Engineering and Mathematics Talent Expansion Program - University Partnership (NU STEP-UP) is a partnership between Northeastern University, two NSF-supported research centers and three Boston-area community colleges (Massachusetts Bay Community College, Middlesex Community College, and Northern Essex Community College) to increase the number of students receiving degrees in STEM disciplines. NU STEP-UP is focused on developing a sustainable STEM model that provides a seamless transition between two- and four-year institutions.

More information can be found here: http://grantome.com/grant/NSF/DUE-0653090

BACK TO TIMELINE

RET-PLUS (2007-2011)

Author(s): Michael Silevitch, Claire Duggan
Institution: Northeastern University, Boston, MA

Abstract (partial):
This award provides funding for a 3 year standard award to support a Research Experiences for Teachers (RET) in Engineering Site program at Northeastern University entitled, "RET-PLUS (Partners Linking Urban Schools," under the direction of Dr. Michael Silevitch and Ms. Claire Duggan. This is a renewal of a previously supported three year RET Site.

More information can be found here: http://grantome.com/grant/NSF/EEC-0742924

BACK TO TIMELINE

CAPSULE (2008-2013)

Author(s): Ibrahim Zeid, Ahmed Busnaina, Claire Duggan, Sagar Kamarthi, Jacqueline Isaacs
Institution: Northeastern University, Boston, MA

Abstract (partial):
CAPSULE, a capstone project-based learning model, brings the STEM/IT workforce experience to high school students and teachers through industry-driven projects and multimedia production. Materials developed at the Museum of Science and real-world problems solicited from local industry are formulated as projects to be used in a hands-on capstone elective course or in after school activities so that students can relate STEM concepts covered in the classroom to real world applications and learn the engineering design process (EDP).

More information can be found here: http://grantome.com/grant/NSF/DRL-0833636

BACK TO TIMELINE

ITEL (2008-2014)

Author(s): Ibrahim Zeid, Claire Duggan, Mohamad Metghalchi
Institution: Northeastern University, Boston, MA

Abstract (partial):
The Northeastern University (NU) ITEL Scholarship Program supports academically talented, financially constrained students receiving degrees in STEM, with a focus on engineering leadership. This program targets incoming freshmen from surrounding K-12 school districts and transfer students from partner Community Colleges. Targeted districts include but are not limited to Boston, Cambridge, and Medford. Partner Community Colleges include Mass Bay, Middlesex, Northern Essex Community College and Roxbury Community College.

More information can be found here: http://grantome.com/grant/NSF/DUE-0849804

BACK TO TIMELINE

BEST (2009-2014)

Author(s): Robert Chen, Arthur Eisenkraft, Cristos Zahopoulos, Pamela Pelletier, Tala Khudairi
Institution: University of Massachusetts Boston, Dorchester, MA

Abstract (partial):
The Boston Energy in Science Teaching (BEST) project is a Phase II MSP that explores the use of one of the organizing principles of science, Energy, as a vehicle to extend and research how teacher in-depth conceptual understanding translates into deeper student engagement, exposition and learning of science. This innovative focus on Energy will allow the Partnership to examine how fundamental organizing principles (e.g., energy, models, scale, systems, and constancy/change) can be used to better teach science at the elementary through the undergraduate level.

More information can be found here: http://grantome.com/grant/NSF/DRL-0928666

BACK TO TIMELINE

TRANSFORM (2014-2018)

Author(s): Ibrahim Zeid, Claire Duggan, Sagar Kamarthi
Institution: Northeastern University, Boston, MA

Abstract (partial):
In this project, Northeastern University and MassBay Community College are collaboratively implementing an innovative TRANSFORM model to retool the skill set of liberal arts college graduates to prepare them for careers in manufacturing. The project is enabling the targeted population to step into the advanced manufacturing jobs that otherwise go unfilled due to shortage of qualified job seekers nationwide. The TRANSFORM program is also increasing the awareness of manufacturing careers among members of underrepresented groups.

More information can be found here: http://grantome.com/grant/NSF/DUE-1407160

BACK TO TIMELINE

S-POWER (2014-)

Author(s): Bradley Lehman, Claire Duggan, Khalil Shujaee, Marilyn Minus, Richard Harris
Institution: Northeastern University, Boston, MA

Abstract (partial):
The proposed program addresses two national crises: (i) the extremely low persistence rate of underrepresented minority (URM) transfer students to bachelor degree granting institutions in STEM fields, and (ii) the need for fundamental research and training in energy related fields. Through the awarding of scholarship support to low-income, academically talented students, and by designing, implementing, assessing, and disseminating essential new approaches to transfer student education, S-POWER will unite students and faculty at both sending and receiving institutions to collaboratively address Grand Energy challenges, such as developing materials for energy efficient systems and energy power management.

More information can be found here: http://grantome.com/grant/NSF/DUE-1564653

In Spring 2021, this program was institutionalized by Northeastern University, who continues to provide funding to ~10 S-POWER scholarship students each year: NEU S-POWER

BACK TO TIMELINE

REU-D3 (2015-2020)

Author(s): David Kaeli
Institution: Northeastern University, Boston, MA

Abstract (partial):
This REU site will help support NSF's mission to promote the progress of science by providing multi-disciplinary research experience for undergraduates with exciting 10-week summer-based experiences in computer science/engineering laboratories, enabling work on both fundamental and applied data-driven problems, focused on applying machine learning techniques, data analytics, and parallel computing technologies, and preparing them for future scientific career.

More information can be found here: http://grantome.com/grant/NSF/ACI-1559894

BACK TO TIMELINE

REU-POWER (2018-2022)

Author(s): Bradley Lehman
Institution: Northeastern University, Boston, MA

Abstract (partial):
This award establishes a new Research Experiences for Undergraduates site to create "Pathways Opening World Energy Resources" (REU - POWER), located at Northeastern University, Boston MA. The REU-POWER site will provide rising sophomores, juniors and seniors with a summer-based experience working with professors from across the College of Engineering, engaged in research on topics pertaining to the National Academy of Engineering (NAE) Grand Energy Challenge. There is special emphasis on the recruitment of underrepresented minority (URM) students, and because of this, REU-POWER can particularly create professional development programs that address particular barriers of URM STEM populations.

More information can be found here: https://grantome.com/grant/NSF/EEC-1757650
Also see: CfSE: REU-POWER

BACK TO TIMELINE

Engineering PLUS (2021-2025)

Author(s): Gregory Abowd, Michael Silevitch, Claire Duggan, Richard Harris, Jacqueline El-Sayed
Institution: Northeastern University, Boston, MA

Abstract (partial):
The broader impact of this NSF INCLUDES Alliance project is nationwide growth in the number of underrepresented minorities and women obtaining undergraduate and graduate engineering degrees. Specifically, the project aims to achieve a national target of 100,000/30,000 (BS/MS-PhD) degrees for underrepresented minorities and women by 2026 and establish a future growth rate that can substantially close the gap. Engineering depends on team collaboration, and research shows that diverse groups are typically more effective than homogeneous teams when complex problem solving is a critical goal. The U.S. must therefore educate a diverse engineering workforce to encompass the complex technological challenges faced by society. This NSF INCLUDES project directly addresses this critical challenge. This Alliance will have a broad reach, expanding to 150 higher education institutions in five major regions of the country. The work of the Alliance is designed to learn what is most effective at broadening participation in engineering education, particularly at the critical transition points for students. Its work will enable wider adoption of best practices through the training of change agents that can work effectively both regionally and nationally.

More information can be found here: https://www.nsf.gov/awardsearch/showAward?AWD_ID=2119930
Also see: CfSE: stEm PEER Academy

BACK TO TIMELINE

REU-PATHWAYS (2022-2025)

Author(s): Ibrahim Zeid, Claire Duggan
Institution: Northeastern University, Boston, MA

Abstract (partial):
The three-year REU Site at Northeastern University will host 10 students each year from community colleges to participate in research projects focusing on the field of Smart Engineering with four subfields: AI/Machine Learning; Smart infrastructures; Smart materials; and Smart health. The REU site is guided by two of the grand challenges of the National Academy of Engineering: personalized learning and scientific discovery. Specifically, this project trains students about how to conduct cutting-edge research as well as how to communicate their research findings to the broader community. The project focuses on recruiting URM and students who are currently underrepresented in the STEM workforce. The outcome will be a better-trained, diverse scientific workforce, which will help deliver solutions that both benefit the society and maintain the competitive edge of the United States in the global economy.

More information can be found here: https://www.nsf.gov/awardsearch/showAward?AWD_ID=2150417
Also see: CfSE: REU-PATHWAYS

BACK TO TIMELINE

AI-ED: Using AI to Improve Students' Learning and Build Skills for the Future (2024-2027)

Author(s): Ibrahim Zeid, Claire Duggan
Institution: Northeastern University, Boston, MA

Abstract (partial):
The broader impact of this Broadening Participation for Engineering Track-2 (BPE-Track-2) proposal addresses the critical need to enhance AI competency among K-12 educators in STEM fields. As AI technologies rapidly advance, there is a growing demand to prepare students for an AI-driven future. The project is to transform K-12 education by equipping teachers with the knowledge and skills to incorporate AI into their classrooms. The project ensures that students, particularly those underrepresented in STEM, are prepared for an AI-driven future. By providing comprehensive professional development (PD) for teachers, this project fosters a learning community that supports the development and implementation of AI-effective teaching practices. The project enhances classroom teaching and promotes equity in STEM education. It also contributes to a more technologically proficient, and AI-informed STEM workforce. The project aligns with the National Science Foundation's mission to promote scientific progress by addressing the growing demand for AI literacy in education. Through the development and dissemination of AI best teaching practices and an innovative AI-focused teacher PD model, this project has the potential to transform high school education on a national scale, aligning with NSF's mission to advance the nation's prosperity and maintains its competitive edge in the global economy.

More information can be found here: https://www.nsf.gov/awardsearch/showAward?AWD_ID=2414751
Also see: CfSE: AI-ED

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