



## *Nuclear Power Institute* **Educator Impacts** *2007-21*

The Nuclear Power Institute (NPI) has, from the beginning, relied on the expertise, energy, and dedication of K-12 educators to support our core programming for K-12 students in Workforce Industry Training (WIT), WIT Jr., Achieving Through Optimistic Mentoring (ATOM), and previously, POWER SET, Power GRID, and Boys Resourcing Technology (BRT). The most important aspect of the NPI K-12 programs is that educators serve as our ambassadors, our constant reminders of what is fundamental in classrooms, and our compasses for the objectives we develop. Without the dedication, effort, and coordination of these K-12 educators, our programs would not be as successful. These educators digest the information and experiences we provide and creatively and passionately incorporate it into their already very full curriculums in a seamless, impactful manner. Overall, NPI has engaged with 260 educators in the state of Texas. According to a study published on [weareteachers.com](http://weareteachers.com), the average teacher impacts approximately 3,000 students during their career. Using this statistic, NPI educators will impact 780,000 students. Because of our educators' dedication and leadership, all of these students will have a better understanding, appreciation, and self-awareness of STEM fields and potential careers.

**Overall, NPI has engaged with 260 educators in the state of Texas. According to a study published on [weareteachers.com](http://weareteachers.com), the average teacher impacts approximately 3,000 students during their career. Using this statistic, NPI educators will impact 780,000 students.**

## Impacts on Student Participation

NPI engages, enhances and inspires educators and students through a variety of K-12 STEM programs. For each of these programs, educators serve as campus “sponsors” to supervise, advise, and guide the students through our programs to maximize opportunities to encourage interests. The sponsors report metrics from the programs ensuring the students meet or exceed expectations. These educators perform this role in addition to their primary campus responsibilities for teaching, coaching, advising, etc.

## Powerful Opportunities for Women Eager and Ready for Science, Engineering, and Technology

NPI student programs began with the Powerful Opportunities for Women Eager and Ready for Science, Engineering, and Technology (POWER SET) program in 2007 to encourage students to pursue their studies and eventual careers in science, technology, engineering, and math (STEM). With NPI providing access and financial support, POWER SET members began to blaze trails across the state and impassion their fellow classmates, families, and community members. From 2007, POWER SET participation grew from a handful of students to over 500 annually by 2018. In 2019, NPI went through a dramatic restructuring that combined the high school and primary school programs and updated its mission statement to incorporate clean energy.



## Workforce Industry Training

In 2010, the Workforce Industry Training (WIT) program was launched to expand the reach and reinforce the success of POWER SET. Modeled after the POWER SET program, WIT was designed for both male and female students who were primarily interested in two-year technical degrees or certifications. Through the WIT program, students participated in events and activities that would expose them to all industries, their professionals, and trades, and STEM college and university programs around Texas. The WIT and POWER SET programs rapidly grew around the state of Texas, expanding NPI's reach to 10 high school partners for each program and totaling 450 student membership by the 2012-13 school year. The programmatic result of the NPI restructuring in 2019 was the absorption of POWER SET into the WIT program with a new, broadened reach and mission from the original WIT structure.

## Power Girls Responding to Industry Demands and Boys Resourcing Technology

NPI soon developed two more programs to deepen the exposure of STEM and amplify POWER SET and WIT members' STEM passion and enthusiasm into primary schools with the creation of Power GRID (Girls Responding to Industry Demands) and Boys Resourcing Technology (BRT). The Power GRID and BRT programs were

mentorship programs, respectively, for POWER SET and WIT members to encourage and sustain early STEM interest and studies. These unique, collaborative, and nurturing relationships were strengthened through a range of academic and nonacademic activities and were proven to cultivate leadership skills and improve self-esteem and STEM studies. In the 2019 restructuring, Power GRID and BRT were combined to form the Achieving Through Optimistic Mentoring (ATOM) program.

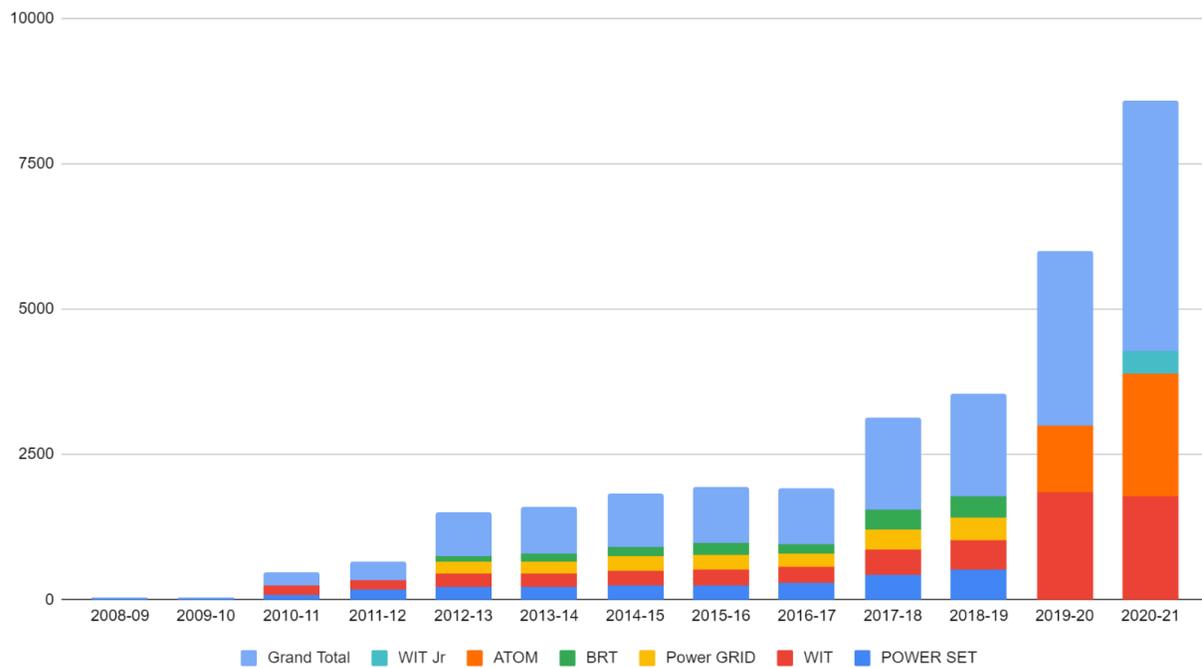
Our educators remain the key to success for the core programs as well as all of the new programs and activities offered by NPI. During the expansion efforts of 2019 and beyond, we asked a few of our dedicated educators to further assist NPI efforts with regional coordination, providing a regionally local face and expertise for the campus sponsors. With their help, NPI grew from 10 active schools to 31 as of 2021.

## Programs by the Numbers

### Student Participation by Year

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
POWER SET	18	19	95	177	227	225	236	257	291	428	527		
WIT			144	158	227	217	260	270	277	442	508	1,849	1,785
Power GRID					196	209	244	252	228	345	385		
BRT					102	150	175	189	158	348	356		
ATOM													
WIT Jr												1,144	2,110
WIT Jr													394
<b>Grand Total</b>	<b>18</b>	<b>19</b>	<b>239</b>	<b>335</b>	<b>752</b>	<b>801</b>	<b>915</b>	<b>968</b>	<b>954</b>	<b>1,563</b>	<b>1,776</b>	<b>2,993</b>	<b>4,289</b>

### Nuclear Power Institute Programmatic Student Participation by Year



## Enrichment Programs for Educators

It is as important for NPI to offer the programming for the educators as it is for the students so that they are provided the tools and knowledge needed to inspire students to explore and engage in STEM. NPI is focused on the state of Texas, and for the past 14 years, has reached educators in 25 counties in Texas and over half of the Education Service Centers in Texas. Three-quarters of the educators working with NPI have taken advantage of one or more of the educator programs listed below.

### Counselors Making Occupational Readiness Exciting

This program is designed for school counselors to provide them more support in gaining additional information about careers in nuclear applications as well as allowing for a better understanding of which educational tracks students need to follow if they hope to enter nuclear and other STEM careers. Counselors Making Occupational Readiness Exciting (C-MORE) endeavors to enhance counselors' understanding of STEM education and career paths, providing support and opportunities for counselors to visit community and technical colleges, universities, and industry sites while collaborating with other counselors and NPI representatives. C-MORE attempts to broaden counselors' awareness of the importance of STEM education as they tend to their daily, wide-ranging demands and expectations while strengthening our ties with teachers and students by including counselors who are an essential component of the education team. C-MORE will add another element of support and quality to NPI K-12 programming.

C-MORE was offered in 2011-13 and in 2018. A total of 21 educators participated.

## Enrichment Experiences in Engineering for Secondary Teachers

While not an NPI program, NPI has funded teachers from our network to participate in Enrichment Experiences in Engineering (E3). The purpose of the E3 program is to involve enthusiastic math and science teachers in a research experience with Texas A&M Engineering faculty to help develop ideas to incorporate engineering into math/science curricula or lesson plans. Following two weeks of residency on the Texas A&M campus, educators from the NPI network then spend two weeks with technicians and engineers at the South Texas Project or Comanche Peak nuclear power plants to expand their understanding of plant operations. The expectation is that the teachers will make an ongoing contribution to preparing and inspiring pre-college students to pursue an engineering degree and enrich the NPI mission. Educating students about engineering at earlier ages will spark their interests before college and increase their chances to successfully complete a degree in an engineering discipline.

E3 has been offered to NPI educators since 2008. A total of 43 educators from the NPI network have participated in this partnership with Texas A&M Engineering.

## STEM 4 Innovation

Although STEM 4 Innovation is also not an NPI program, we have supported it and our educators by providing funds so that our educators may attend at no cost because this program impressively focuses on providing Texas K-12 formal and informal educators, administrators, and counselors ideas, strategies, and resources to encourage more of their students to pursue careers in STEM. STEM 4 Innovation is an outstanding two, half days of interactive experiential learning that provides eight hours of valuable continuing education credit while exposing educators to STEM at a research one university. Hosted by Texas A&M, NPI sponsors teachers in Texas to provide cutting-edge content and applications to inspire the next generation of scientists, engineers, and mathematicians.

STEM 4 Innovation (previously Teachers Summit) was offered to NPI educators from 2008–15 and again in 2019; a total of 154 educators participated.

## Teacher Research Academy at Lawrence Livermore National Laboratory

In partnership with NPI, the Teacher Research Academy (TRA) offers middle school, high school, and community college faculty unique professional development experiences at Lawrence Livermore National Laboratory. TRA educators participate in a continuum of standards-based instruction, taking them from novice to mastery in exciting scientific disciplines. Teachers who complete the TRA increase their understanding of science and technology, become experienced using scientific equipment to perform standards aligned experiments, are better able to provide students a context to understand how science is applied, and are better able to guide student research projects.

TRA was offered in 2011-12 and 2018-19, with a total of 11 teachers participating.

## Educators Uniting Resources, Excellence, and Knowledge for Achievement

The Educators Uniting Resources, Excellence, and Knowledge for Achievement (EUREKA) program is a unique professional development experiences at Texas A&M in partnership with NPI. EUREKA educators participate in a variety of activities, including curriculum enrichment development, collaboration with university professors and fellow Texas STEM teachers, tours, and research opportunities. This program was the foundation of Science on Saturday (SOS).

This was offered in 2011, with three educators participating in immersive experiences.





## Community Leaders and Educators Actively Networking

Community Leaders and Educators Actively Networking (CLEAN) is a three-day networking event hosted by Phillips 66 for community leaders and K-12 educators to come together and discuss, teach, and learn strengthening common interests, celebrating successes, and identifying areas of potential collaborative growth. CLEAN will provide K-12 educators the opportunity to share best practices, identify skills gaps, and learn new STEM concepts utilized at industry facilities to incorporate into their lessons with their own students increasing awareness of STEM applicability in future STEM-based careers. CLEAN will also provide for discussions with community leaders to gain understanding into their decisionmaking. The overall focus of CLEAN complements our partner's, NPI, focus on creating academic and outreach programs to prepare, inform, and attract students into STEM majors.

Initiated in 2018 and held again in 2019, CLEAN engaged 20 educators.

## Science on Saturday

Science on Saturday (SOS) is an exciting science program for the young K-6 and young-at-heart. The event highlights fun and educational science experiments and demonstrations of atmospheric pressure, sensory stimulation, environmental

effects, and much more. Students learn through interactive, hands-on activities that include fun with polymers, magnets, and neurons, as well as everyday products and household materials.

Held annually since 2012, 30 educators have hosted SOS events.

## Nuclear Power, Process and Manufacturing Technology Workshop for STEM Educators at Wharton County Junior College

NPI has partnered with Wharton County Junior College (WCJC) to provide a one-day professional development program for Texas STEM teachers. Participants learn about different WCJC programs such as process technology, nuclear power technology, and manufacturing technology. Participating educators hear from instructors and learn of the three programs offered at the WCJC Center for Energy Development-Bay City campus. Educators take what they have learned back to their students and campuses. These educators are asked to report back the number of students and/or fellow educators who participated in a lesson based on the knowledge learned in the workshop.

Initiated in 2021, 62 educators participated in this inaugural event, which we hope will be replicated in the future with WCJC and/or other higher education partners. These 62 educators then delivered lessons to 4,877 students and 70 fellow educators. The multiplier effect from this type of program helps to further expand the breadth of STEM knowledge for student and educators in Texas.

## Galvanizing Reliable Energy Education in Nuclear (GREEN)

NPI is celebrating the 60th anniversary of the Nuclear Engineering and Science Center (NESC) TRIGA reactor with the Galvanizing Reliable Energy Education in Nuclear (GREEN) program.

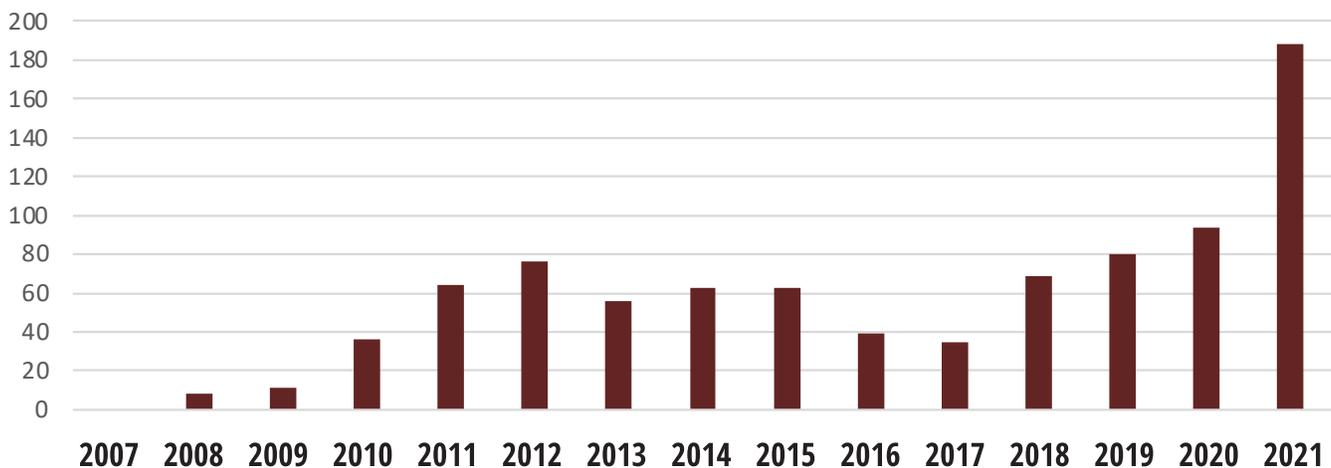
The GREEN program aims to expand awareness, knowledge, and appreciation for the 60 years of the TRIGA's numerous collaborations, trainings, partnerships, projects, and education opportunities. NPI will provide funding support for schools to bring students and educators to visit and tour the TRIGA at the NESC. Offered in fall of 2021, 13 independent school districts applied for participation in this program. Tours were conducted in December 2021.

The following tables summarizes educator participation in NPI programming over the years.

## Educator Participation in NPI Programming by Year (data counts teachers in each year they participated)

NPI Program	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
WIN Conf				4												4
C-MORE					6	5	7					3				21
E3/STP		5		4	6	5	4	5	4	5		1	4			43
Summit/STEM4		3	9	20	21	33	14	24	26				4			154
TRA					3	2						2	4			11
EUREKA					3											3
Teacher Ex				1		2										3
CLEAN												10	10			20
SOS						5	3	3	2	3	4	4	4	2		30
Camp															2	2
STP STEM Educator Day															4	4
WCJC Workshop for STEM Educators															62	62
POWERSET			2	7	10	8	10	11	11	11	11	17	18			116
WIT					15	16	18	20	20	20	20	32	36	92	93	382
WIT Jr															19	19
Nuclear Science Week															2	2
Clean SMARTS															6	6
GREEN																0
<b>Totals</b>	<b>0</b>	<b>8</b>	<b>11</b>	<b>36</b>	<b>64</b>	<b>76</b>	<b>56</b>	<b>63</b>	<b>63</b>	<b>39</b>	<b>35</b>	<b>69</b>	<b>80</b>	<b>94</b>	<b>188</b>	<b>882</b>

## Educator Participation in NPI Programming by Year



## Further Enrichment Opportunities

Since the 2019 restructuring of NPI, there has been an emphasis on growing the presence of the core K-12 programs across Texas, as well as providing additional opportunities for engagement for all students and educators in Texas. Additionally, the 2020-21 academic year presented a predominantly virtual environment due to the COVID-19 pandemic. In response, NPI nimbly developed new programs and opportunities to fit into the new landscape while maximizing local resources and “at-home” talents and skills by NPI staff, colleagues, friends, and families. Below is the “menu” of offerings the NPI team has developed to meet the challenges faced since 2020.

### Clean SMARTS Master Class

The “Clean SMARTS Master Class” six-episode mini-series provides viewers with an opportunity to hear, learn, and be inspired by experts in the areas of national security, manufacturing, applications of nuclear, relationship building and skills in diplomacy, technology, and global security (SMARTS).

### Galvanizing Reliable Energy Education in Nuclear (GREEN)

This program aims to expand awareness, knowledge, and appreciation for the 60 years of the TRIGA's numerous collaborations, training, partnerships, projects, and education opportunities.

### Virtual Tours and Opportunities

NPI has created a repository of resources that our educators can utilize to bring virtual tours of university campuses and industry/community facilities to their students. This has been very useful when face-to-face visits have been unavailable. It also provides our WIT and ATOM sponsors another way of exposure to STEM opportunities for their students.

### Manufacturing + STEM/STEAM Awareness Competition

Together with SecureAmerica, NPI is combining National Manufacturing Day and STEM/STEAM Day into one unique celebration by launching a competition intending to bring about a strong STEM awareness for Texas 6-12 grade students.

### Science in the Kitchen- Cooking Up Curiosity

The “Science in the Kitchen - Cooking Up Curiosity” video series explores the science, production, automation, distribution, and workforce behind the Texas food industry using the “kitchen” and “cooking” as alternative platforms to convey STEM knowledge and information.

### Nuclear Science Week Student Competition

The “Nuclear Science Week Student Competition: Get to Know Nuclear” projects promotes discussion and increases awareness of nuclear science in the local community.

### The Path of Most Persistence

“The Path of Most Persistence” podcast educates and inspires by highlighting and sharing tenacious stories that provide inspiration, motivation, and appreciation.

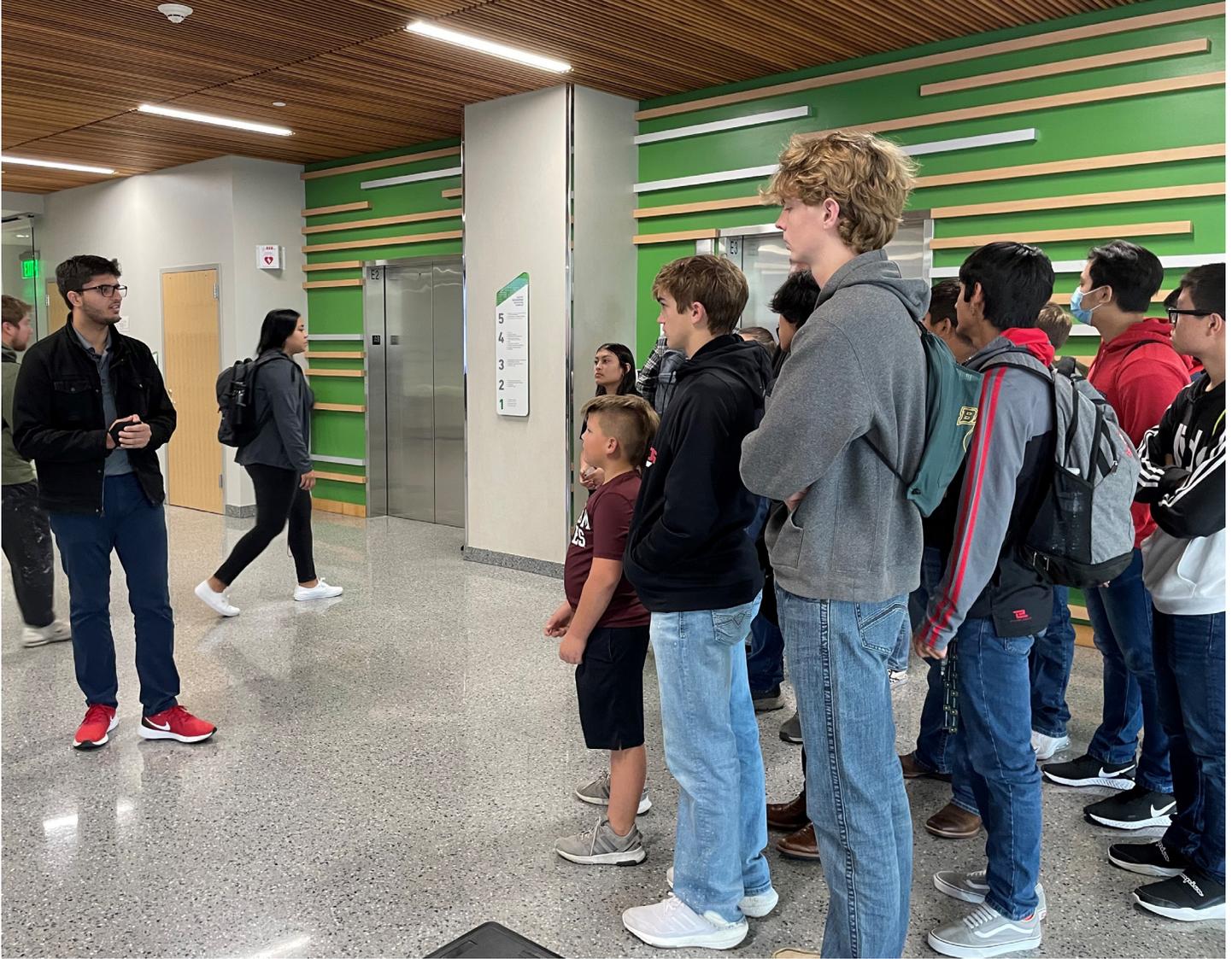
### The Catalyst

NPI's “The Catalyst” newsletter provides our network of engagement with quarterly reports of NPI's programs, activities, and success stories.

### Block Coding for Beginners Video Series

The NPI Block Coding for Beginners Video Series is a FREE self-paced, online opportunity to learn block coding and computer science. This series is designed for teachers of all age levels interested in a beginners-level introduction into code.org's “CS Fundamentals” and Google's “CS First Participants” will find engaging videos and instruction.

Visit [npi.tamu.edu](http://npi.tamu.edu) for Engagement Opportunities



## **Community Engagement through Science on Saturday (SOS)**

NPI supports our partner high schools and their WIT organizations to organize fun, educational, and interactive STEM events for the whole community. Science on Saturday (SOS) is designed to spotlight WIT’s enthusiasm for STEM and ignite an interest in experiments, hands-on activities, and demonstrations on a variety of science and engineering topics. Past events have included activities related to robots, virtual reality, building and structural challenges, health science, and aerospace engineering, among others. All K-12 students, parents, educators, and community members are invited to participate in this program.

## **Virtual Engagement Opportunities**

### **Block Coding for Beginners Video Series**

The NPI Block Coding for Beginners Video Series is a free self-paced, online opportunity to learn block coding and computer science. This series is designed for teachers of all age levels interested in a beginners-level introduction into Code.org’s “CS Fundamentals” and Google’s “CS First.” Participants will find engaging videos and instruction.

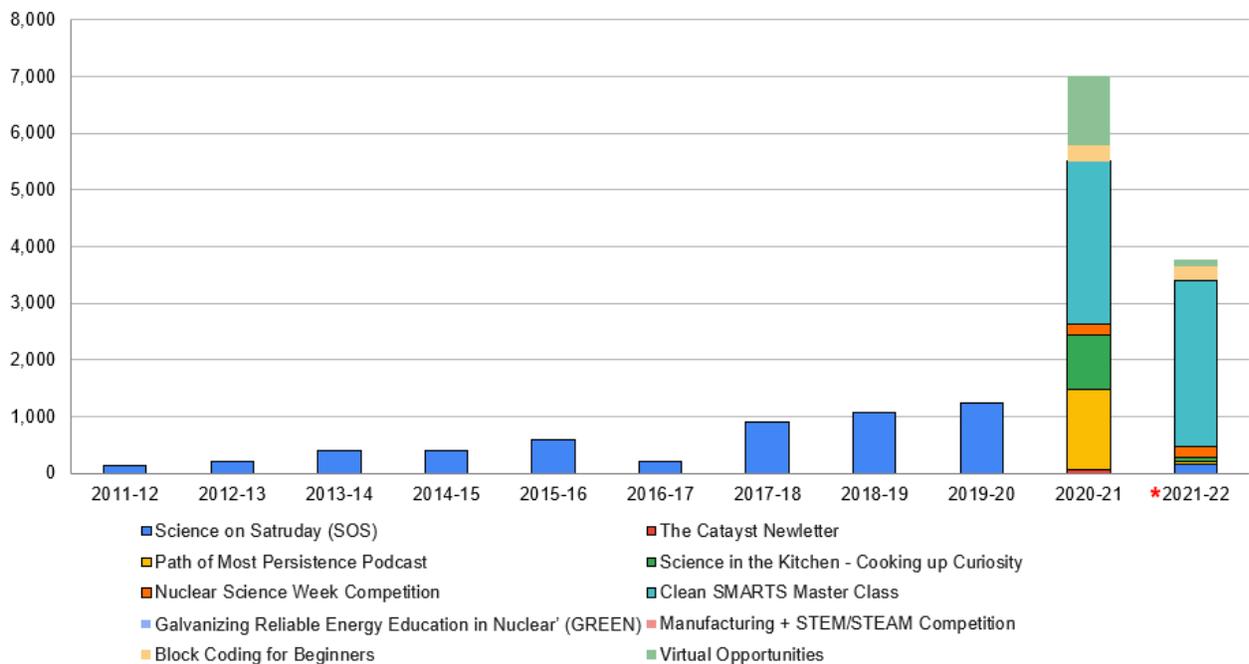
### **Virtual Tours and Opportunities**

NPI has created a repository of resources that our educators can utilize to provide their students with virtual tours of university campuses and industry/community facilities. This has been very useful during the times that face-to-face visits have been unavailable. It also provides our WIT and ATOM sponsors with ways to fulfill their needs to provide external exposure to STEM opportunities for their students.

The tables below depict the participation in enrichment opportunities and SOS events.

	Science on Saturday (SOS)	The Catalyst Newsletter	Path of Most Persistence Podcast	Science in the Kitchen - Cooking Up Curiosity	Nuclear Science Week Comp.	Clean SMARTS Master Class	Galvanizing Reliable Energy Education in Nuclear (GREEN)	Mfg. + STEM/STEAM Comp.	Block Coding for Beginners	Virtual Comp.	Total
2011-12	150										150
2012-13	200										200
2013-14	400										400
2014-15	400										400
2015-16	600										600
2016-17	200										200
2017-18	900										900
2018-19	1,070										1,070
2019-20	1,250										1,250
2020-21		68	1,416	950	210	2,861			283	1,228	7,016
2021-22	161	9	31	86	177	2,948			250	109	3,771

**Participation in NPI Enrichment Opportunities and Science on Saturday (SOS)**



\* 2021-2022 Data is as of 10/31/2021