



STEDTRAIN

We put a man on the moon.
Help our children reach the stars.

STEDTRAIN 2021-22 Grant Year Report

February 1, 2021 through April 30, 2022

Mission and History

STEDTRAIN is a Committee of the The Huntsville Association of Technical Societies (HATS) that administers a Science, Technology, Engineering, and Mathematics (STEM) Seed Grant program that provides Type I and Type II Grant funding of \$250 to \$1000 and \$1500 to \$2500 respectively to an educator for innovative hands-on classroom projects that will stimulate children's interest in science and technology.

Since the Program began in 1988, it has distributed over \$624,091 for 599 individual grants and other worthy educational projects. The grants currently benefit approximately 10,000 students directly and about 20,000 indirectly a year.

The STEDTRAIN program covers Limestone, Madison, Jackson, Morgan and Marshall Counties in Alabama and Lincoln County in Tennessee.



HATS is a nonprofit 501(c)(3) organization supporting Huntsville area technical and professional societies dedicated to the advancement of science and engineering. Founded on June 17, 1969, HATS has grown from seven charter societies to the current organizations representing more than 18,000 individuals. The STEDTRAIN Committee encourages the next generation of scientists, engineers, and technical professionals within our community. We put a man on the moon. Help our children reach the stars.

HATS is grateful to many of its Member societies, corporate, and individual donors for their support. The economic situation of the past few years has substantially increased the number of grant applications received. The increase has required funding substantially beyond what was previously possible.

HATS is listed on Charity Navigator, the nation's largest and most-used charity evaluator, but has not been assigned an Encompass Rating because the organization does not file a full IRS form 990s.

[View HATS Rating on Charity Navigator](#)

Federal EIN: 23-7070415

Alabama Solicitation License: AL21-068

Key Personnel



COL Michael (Mike) F. Baran, Ph.D.
 Systems Engineer - Senior Principal
 US Air Force (Ret), SAIC Huntsville
 STEDTRAIN Chair



Mr. Paul Agarwal
 Manager, Configuration Management
 Advanced Research Center
 COLSA Corporation
 STEDTRAIN Vice Chair



Ron Hackett, PE
 Electrical Engineer, President & CEO
 US Air Force (Ret), H-STAC Software and
 Web Solutions
 STEDTRAIN Website Administrator



Allison Cash
 Capture Manager
 Dynetics
 HATS Treasurer



Allison Rhen
 Director Business Development
 MJLM Engineering and Technical Services
 HATS President

Calendar

The STEDTRAIN Seed Grant cycle is 15 months long beginning on February 1st and ending on April 30th of the following year. It is built around the school year and allows for collecting and evaluating proposals and then awarding and executing grants. This causes a three month overlap with the calendar year. To eliminate confusion from these overlapping cycles, this report will focus on one complete Seed Grant cycle

| | |
|---|--------------|
| In the year the Seed Grant is awarded: | |
| Request for Proposals begins | February 1st |

| | |
|--|---|
| Deadline for proposals submission | April 1st before midnight |
| Deadline for principals to accept proposals | April 3rd before midnight |
| Deadline to notify STEDTRAIN of problems | April 15th before midnight |
| Awards published and notices sent | On or about August 5th |
| Deadline to accept awards | 15 days after notification |
| Deadline to verify award ceremony attendance | 4 days before the ceremony |
| Award Ceremony | Usually the last Saturday in August except Labor Day Weekend, |
| In the year following the Seed Grant award: | |
| Midterm reports due | January 20th before midnight |
| Final reports due | Thursday at noon before presentations |
| Final presentations | Usually the last Saturday in April |

Proposals Statistics

HATS rules prohibit STEDTRAIN taking money from other HATS programs, so STEDTRAIN funds as many acceptable proposals as possible each year without running a deficit. Some proposals do not qualify for funding and are not funded for cause. There can be proposals that were deemed to be acceptable that are not funded because of a lack of funds.

| | |
|------------------------------|----------|
| Submitted | 9 |
| Funded | 8 |
| Not funded for lack of funds | 0 |
| Not funded for cause | 1 |
| Total Funds | \$12,884 |
| Funding Shortfall | \$0 |

Selected Proposal Abstracts

Holy Spirit Regional Catholic School (Madison County, Alabama)

Mrs. Lynn K. McQueen

Watch Out It is Fixing to Change - Weather Forecasting is Not an Easy Thing to Do!

Students at our school are very interested in our local weather, how it can change or vary so much from day to day, even minute to minute sometimes. With that in mind we would like to enhance student knowledge about weather, what causes weather events, and how to stay safe during these catastrophic weather situations by incorporating a weather station in our outdoor classroom and a Student Broadcast

Studio at our school. The TV Station would be operated by our middle school students and reporters would be students in every grade level.

Lincoln County High School (Lincoln County, Tennessee)

Ms. Mary E LeBlanc (Marty)

Lincoln County Schools Robotics After School Program

Students need the ability to create, design, innovate, and think critically in order to solve complex challenges. Every student should possess deep knowledge and strong skills in math, science, technology, and engineering and should be excited and ready to use that knowledge in the real world. To meet this challenge, we need to provide students with new tools and techniques that enable them to learn and then practice the knowledge they have acquired. A number of robotics kit platforms are available to schools and have introduced students to math, science, and engineering at all grade levels.

Skyline High School (Jackson County, Alabama)

Dr. Michael Muratet

Teaching STEM Skills with a Weather Station

We will use a weather station to provide hands-on experience for STEM skills. In the lower grades, it provides a meaningful opportunity to plot and interpret data. In the upper grades, it provides a means to meet study objectives for Earth & Space Science and Environmental Science. In all grades, it provides a sense of place to improve learning. The model proposed includes solar visible and UV radiation sensors, which will be useful in solar energy projects we have planned. The Weatherlink device will allow us to stream the weather data to the classroom, and to the community.

A complete list of funded proposals and abstracts can be found on our website at [/showpage.php?pagelid=84&gy=2122](#)

Selected Final Reports

At the end of each Seed Grant cycle, the teachers participate in a conference that is intended to facilitate networking and the sharing of ideas for future STEM education projects. The teachers prepare a tri-fold display and are encouraged to bring in hardware and other examples of their project. They also prepare a final report in Microsoft PowerPoint format and a single overview slide. The overview slides are compiled into a single presentation that runs on a timed loop that is display during the networking period. The following are selected examples of the overview slides.



Overview

Mill Creek Elementary School – Engineering Design Lab 6



Our Drone Project is our most popular project and students are eager to learn more about how drones can be used in real life.

Students applied their knowledge from working on dragsters to real-life problems with our Greenpower car.



- Engineering Design Lab 6 is an ongoing effort to provide students with a variety of hands-on, engineering based projects that will challenge them to utilize critical and analytical thinking skills. 3rd-5th grade students work collaboratively to design, construct, and test weather balloons, CO2 metric dragsters, and drones. They will use Sphero Bolts to develop coding skills.



Overview

Teaching engineering design and scientific inquiry using robots

OBJECTIVES

- Robotics, computer science, coding, and their applications are a part of our overall STEM initiatives. We are teaching engineering design, electronics, mechanical assembly, coding, and collaboration to our students in our robotics classes and club using Parallax BOE Bots and SeaPerch underwater ROVs as platforms. We are teaching students how to use their brains and hands together to solve problems.

PROGRAM EVALUATION

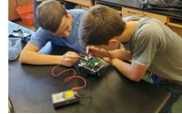
- We will evaluate the program outcomes by monitoring over three years for increased interest in STEM subjects by enrollment in other electives, improved attendance and improved grades, and by the quality of the robotic and code products developed
- We will look for an increase in the complexity and sophistication of the designs and the quality of the workmanship in the realized robots.
- We will also evaluate our program outcome based on participation in competitions

RESULTS



15 new robot club members
 9 on competitive robotics team
 6 taking computer science

BOEBots chassis bought to use with existing controller boards



Students learn the engineering process, hardware assembly, programming building BOEBots

April 24, 2021

2021-22 Seed Grant Report
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Learning Logic with the Turing Tumble

Lori Nelson
Hampton Cove Elementary School



The Turing Tumble makes the abstract concept of computer code more concrete by allowing students to build a mechanical computer. By configuring pieces on a game board to solve problems, students learn how computers work. My students LOVED working with the Turing Tumble!



April 24, 2021

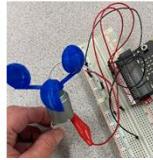
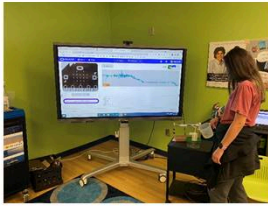
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Overview

Weather Instruments and Problem Solving with Computer Aided Design



- Students completed at least one engineering design cycle to use the CAD program, Tinkercad to design and evaluate a weather instrument
- Students collaborated on peer reviews and problem solving
- 5 students are in the process of completing Makerbot Certification for operator and design thinking
- 6th grade students mentored 4th grade students
- 4th-6th grade students identified problems and designed solutions.

April 24, 2021

2021-22 Seed Grant Report
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Click on a slide for a full scale image.

Impact on the Community

As part of the final report process, teachers report on the participation in their projects. This includes teachers and students who directly participate in the project and teachers and students who are exposed to the project through demonstrations and presentations. Teachers are encouraged to collaborate with other schools, and to bring in external advisors from the area's technical community. The following table summarizes the teachers input for this Seed Grant cycle.

| Involvement | Teacher's School | Other Schools | Total Involvement |
|--------------------------------------|------------------|---------------|-------------------|
| Number of students involved | 1172 | 232 | 1404 |
| Number of teachers involved | 49 | 7 | 56 |
| Number of classes involved | 74 | 13 | 87 |
| Number of external advisors involved | 14 | 3 | 17 |

Donors

Thanks to the following companies, corporations, institutions, and individuals who contributed generously to the HATS STEDTRAIN program.

2021-22 Donors and Contributors

Cash Donors:

Space and Missile Defense Working Group
of the
National Defense Industrial Association



(NDIA),
Tennessee Valley Chapter

IEEE, Huntsville Section



COLSA



Website And Communication Donors:

Hackett Science & Technology Applications
Company



Georgia Tech Research Institute
Huntsville Research Center



Individual Donors:

Paul Agarwal

Woody Williams

Financial Report

As a small organization with less than \$50k in annual revenue, HATS files an annual IRS form 990N. The financial information included in the 990N report may not be sufficiently detailed for some potential donors considering making donations to the HATS STEDTRAIN Seed Grant program, so we provide the following financial report.

Other sources of income include interest on the savings account, PayPal donations, Amazon Smile, and Facebook fundraisers.

| Income | |
|-----------------------------------|-----------|
| Rollover from previous Grant Year | 4,914.34 |
| HATS | 0.00 |
| Donations from HATS members | 17,000.00 |
| Outside donations | 347.50 |
| Grants | 0.00 |

| | |
|-----------------------------|------------------|
| Other sources | 1.86 |
| Total Income | 22,263.70 |
| Expenses | |
| Grants to Educators | 12,883.80 |
| Prizes and special awards | 300.00 |
| Event costs | 0.00 |
| Website and Communications | 17.99 |
| Admin | 0.00 |
| Rollover to next Grant Year | 9,061.91 |
| Total Expenses | 22,263.70 |

The Program Expense Ratio is a number that tells how much of an organization's funding went toward the stated mission of the organization. It is defined as the ratio of Program Expenses (how much was spent on the mission) to Total Expenses.

The STEDTRAIN Program Expense Ratio for this cycle is 99.8637%.

Contact Information

Email us at admin@stedtrain.org

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| Telephone Contacts: |
|----------------------------|

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