

STEAMSPACE

Education Outreach®

Discover Your Future

2019

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STEAM-SPACE.ORG

ABOUT US!



STEAMSPACE Education Outreach® is committed to the creation of a global community of educators, researchers and professionals connected to students around the globe, preparing the youth of today for the roles of tomorrow in STEAM (Science, Technology, Engineering, Arts, and Mathematics) fields, the commercial space industry, and off-world exploration and settlement. In classrooms around the world are the future leaders and pioneers of space. By supporting, educating and connecting our youth to concepts, roles and pursuits available in the domain of space, we believe we all can build towards thriving communities and industries “out there” while improving the world in which we live here on Earth.

OUR MISSION

To offer diverse and explorative educational experiences to all young minds, surpassing the boundaries of race, economics, gender, ideology, disability and learning differences, encouraging the discovery and pursuit of paths towards future careers in college and beyond, with a particular focus on space studies and the space industry. We do this to support the creation and development of prosperous and free human communities and industry both within and beyond the Earth’s atmosphere.

OUR STORY: CITIES IN SPACE®

Our story began over four years ago. Our first initiative, **Cities in Space®**, focused on building a distributed classroom, connecting leaders and educators with students across the globe, exploring the opportunities and ideas inherent in the growing space industry.

At **Cities in Space®**, speakers, judges and industry volunteers come together to share their inspiration, guidance and experience with over 500 students who are developing settlement design and emerging technology concepts with a focus on space. Prior to our events, students and their own teachers and mentors form teams at schools around the

country, with only general requirements and guidelines, allowing them to create their own curriculum initiatives. At the conference, these teams of students, ranging from 4th through 12th grade, gather together to present their projects, exploring broad and diverse aspects of space settlement, technology, and society, to listen to a wide range of professionals speaking on the many areas of interest and opportunity available in the growing space industry, and to converse and actively collaborate, individually and in groups, with each other and with the experts who are currently driving our study and exploration of space.

While we expected some interest and enthusiasm in our first year, we were astonished by the level of hunger and passion shown by students and teachers, hitting maximum capacity for our venue quickly and having to turn students away for lack of resources and accommodation.

In the past 4 years, more than 2,000 students have engaged with **STEAMSPACE** through **Cities in Space** and are setting their course towards college and eventual careers. Our mission to inspire as many youth as possible, sparking their enthusiasm for higher educational degrees and potential careers in the world of space exploration and space industry has already borne fruit.

This past year, **Cities in Space** went international, with over 700 students and teachers. International students and teams who are unable to travel now access to our competition, presenting their projects and experiencing the talks and discussions through video conferencing, enabling them to interact and present globally. Integral to our dream is the expansion of **Cities in Space** across the



globe, allowing students to engage in collaborative STEAM education and interact with space academics and professionals everywhere.

With our first year of international participation, including video-presentation by students in Pakistan at **Cities in Space**[®], and a Leadership Workshop for high school students presented in Morocco at the 2018 MNSAT Conference, **STEAMSPACE** is growing beyond its original boundaries. To date, **Cities in Space**[®] has been presented in parallel with the New Worlds Space industry conference. In the spring of 2020, we will be hosting our first independent Cities in Space Conference. We are also launching Phase Two of the Cities in Space plan, holding our first Leadership Conference in November of 2019. These Leadership Conferences will be smaller conferences with a workshop environment, aimed at developing **Cities in Space**[®] Ambassadors, team leaders from the various participating institutions, allowing for deeper engagement with industry leaders, educators, and each other. These Cities in Space Ambassadors will return to their respective schools as mentors for their peers. Our ultimate goal is lasting and powerful change leading us into better worlds, here on Earth and beyond. These Ambassadors will be the core of a community who implement that change.

With Cities in Space reaching maximum capacity each year, the clear and evident excitement and inspiration flowing between educators, professionals and students, the establishment of our Ambassadors Program, and our first international teams, it has become clear that we need to offer these opportunities to a broader audience, in a larger context, globally for this growing movement. The most frequent and consistent question from teachers, students and experts attending is "What's next?"

To answer this question, our goal is the creation of **STEAMSPACE** Academy.

SURPASSING THE BOUNDARIES OF RACE, ECONOMICS, GENDER, IDEOLOGY, DISABILITY & LEARNING DIFFERENCES



WHY US!

WE BELIEVE IN CREATING LEADERS WHO UNDERSTAND HOW TO THRIVE - NOT JUST SURVIVE

We do this by supporting **Progressive Education Techniques**, including **Project Based Learning (PBL)** and **Social Emotional Learning (SEL)**, preparing our students for real-world working environments while giving them the skills necessary for leading and interacting with others.

Our students are not merely encouraged only in the pursuit of **STEM** (Science, Technology, Engineering, and Math), or, as we believe, **STEAM**, they learn how to be great leaders, managers and collaborators. By teaching skills through PBL, such as cross-discipline research and multi-discipline engagement, students learn the importance of the full range of academic study and work experience and where they personally can be most productive and valued. Reflection on process and product is inherent in PBL best practices, giving students a greater understanding of the **WHY** and moving them in the right direction for college and employment beyond. SEL supports students to not only take risks, but understand the great value to be found in, for examples, failure, accountability, empathy, collaboration, and perseverance.

WE ADD THE "A" TO STEM.

By incorporating the Arts, students gain an understanding of the importance of design, industrial and aesthetic, in the context of living and building civilizations off-world. In addition to this, This also brings an understanding of what it means to **THRIVE**, by highlighting creativity as an essential element for healthy community. What would it be like to live in a community without music, art, performance? Surviving, perhaps. Thriving, no. Likewise a community without facilities and environments consciously designed for its unique context and residents.

CITIES IN SPACE®, THE FIRST STEAMSPACE EDUCATION OUTREACH® INITIATIVE, IS NOT YOUR ORDINARY SPACE COMPETITION.

WE BELIEVE IN DISRUPTION, ACTIVELY INCLUDING THE UNDER-REPRESENTED AND ENSURING ACCESS FOR THOSE UNABLE TO VISIT ONSITE AT STUDENT CONFERENCES AND COMPETITIONS.

IN SUPPORT OF DIVERSITY IN ALL FORMS, INCLUDING ECONOMICS, GENDER, LEARNING DIFFERENCES, HANDICAP, AND GEOGRAPHY, Cities in Space® is an equal opportunity competition and conference, and the larger STEAMSPACE mission includes this as fundamental.

We want all children to have equal privilege to soar in all contexts, here on Earth and beyond. **STEAMSPACE Education Outreach™** relies on sponsors to create this amazing event. We charge schools a mere \$50 per team and we provide for their needs, including their food. We do this to ensure everyone who wishes to participate CAN participate. We have hosted multiple Title 1 schools, supported students with learning differences, have high ethnic diversity and over 60% girls in our student body, and we are committed to maintaining this in the future.

In line with our equal opportunity goals, **WE CAP ALL SUPPLIES FOR TEAMS EXPENSES SO WEALTHIER SCHOOLS MAY NOT HAVE MORE THAT TITLE 1 SCHOOLS.**



WE ARE CREATING THE PIPELINE FOR OUR FUTURE ASTRONAUTS, SPACE SETTLERS, SPACE WORKERS, AND EMPLOYEES in all areas of the space industry. How do we support this? **ENGAGEMENT. ENGAGEMENT. ENGAGEMENT.** Our judges, presenters and exhibitors come from all over the space industry, and spend ample time interacting with participants throughout the conference.

WE CURRENTLY HOST TWO EVENTS PER YEAR IN TEXAS and are spreading our wings to offer more events, nationwide and beyond.

THE CITIES IN SPACE STUDENT COMPETITION AND OUR LEADERSHIP CONFERENCE FOR CITIES IN SPACE AMBASSADORS offer intensive engagement for academic and industry professionals with student teams through small groups, speaker presentations, judging, critiques and simple conversation.

WE ARE CREATING A MOVEMENT OF YOUTH PREPARING FOR SPACE! With our first global year in 2018, **STEAMSPACE** is quickly growing beyond the bounds of Texas and the United States. We continue to strive to include all children, everywhere, in broad and great opportunity. By connecting our school teams to each other and promoting community, we allow students to see beyond their immediate environment and to problem-solve, and to befriend and connect with others who may be quite different. Each year, student teams and educators connect prior to the CiS competition to practice, network and prepare, and our Cities in Space Ambassador program will connect those students most passionate about both space AND community. When CiS comes around each year, students already HAVE community. This is what launches movements! And this is why we, and our students and participants, are different.

SEL SUPPORTS STUDENTS TO NOT ONLY TAKE RISKS, BUT UNDERSTAND THE VALUE IN FAILURE, ACCOUNTABILITY, EMPATHY, COLLABORATION, & PERSEVERANCE



WE NEED YOU!

STEAMSPACE Education Outreach® is a nonprofit, relying on sponsorship from people who see our future in space and are willing to support as broad a population of children as possible and to enable those young minds to discover and pursue educations and careers in space.

By supporting us, you are supporting the more than 2,700 youth engaged in **Cities in Space®** by 2020, and increasing numbers beyond, as they develop their passion for space and discover their path in this developing Golden Age.

To become a sponsor of our mission, reach out to us. We look forward to your participation in our 5th Annual Cities in Space Conference and the 1st Annual Leadership Conference.

WHAT'S NEXT? STEAMSPACE Academy

STEAMSPACE aims to have a year-long track for students, expanding our existing "out of the bubble" competition experience into a global space education program. Our academy track will prepare students with the knowledge needed for truly understanding the workings of the space industry and offer lessons which parallel the aims of Cities in Space. Through problem solving, collaboration, and exploration of **STEAM** (Science, Technology, Engineering, Art and Math) education with a focus on space, our academy track will have students working with leading businesses, entrepreneurs, engineers, researchers, artists and innovators in the space industry.

To date, our **STEAMSPACE** Community has reached over 2000 students

and educators. We've had over 60% girls and are constantly working to encourage and include the under-represented in our world. Also integral to our dream is the existence of a community of students connecting from all over the world and collaborating on technological, social, and structural concepts, prototypes and products that will support humanity's exploration and occupation of space. With these collaborations, including direct connection with current industry and intellectual leaders, students will be able to foresee and to pursue opportunities and trajectories towards personal passions, college careers, and employment beyond elementary, middle, and high school.

It is not just the students who benefit from **STEAMSPACE** initiatives. Those who currently pursue efforts in space gain and benefit from the connection to our youth. This reciprocal relationship between generations allows business and academic leaders to know, inspire, and to prepare their future employees and researchers, and to better adapt and prepare themselves for the next generation, ensuring the academic and commercial pipeline necessary for our continued growth beyond our Earth.

Our academy track will offer a collaborative distributed classroom program with designated, interdisciplinary, and interactive lessons. Each month, students will have a industry professional mentor with a distinct focus for the track, supporting skills, and ideas which will help the student work his or her way towards potential paths and careers. These mentors will represent various areas of



space settlement, including off-world agriculture, environmental studies, sociology and psychology in enclosed communities in addition to typical engineering and hard science pursuits, and will present real-world problems for the class to work, in conjunction and collaboration with a given mentor. The academy track will incorporate science, technology, mathematics, and engineering along with the arts, both design and creative. Mentors will communicate directly with students as they collaborate, formulate, and problem solve.

STEAMSPACE strongly promotes and believes in progressive education techniques and will incorporate such within our program. Holly Melear, Director and Founder of **STEAMSPACE**, has been an educator for over 20 years and believes strongly in the advantages of Project Based Learning and Social Emotional Learning strategies and techniques. To ensure thriving settlements off-world, and to grow truly successful leaders for tomorrow, our academy track will offer students an education that incorporates collaboration, compassion, empathy, and leadership skills along with technical and fact-based skills.

Our plans for **STEAMSPACE** Academy include the development of an educational platform to enable remote learning opportunities as well as to augment classroom environments. This platform will allow educational programming that is accessible and exciting for both students and teachers. We intend to make teaching as exciting and easy to approach for our hard working educators as it will be for our students. **STEAMSPACE** plans to launch our Academy in the Fall of 2020.

Please join us in supporting the next generations and encouraging their future in space, and their potential employment and engagement in and with the space industry. These are exciting times, and we at **STEAMSPACE** want to ensure all our youth are offered the opportunity to soar!

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SPONSORSHIP



STEAMSPACE EDUCATION OUTREACH® 2019 SPONSORSHIP DETAILS

GOLD SPONSOR: A DONATION OF \$20,000

This sponsorship level allows us to provide the best experience for our students, not only covering the basics but allowing us to just expand beyond our normal activities and go the extra mile for our students. Your donation will allow us to not only support our conferences, but work towards the future development of the Academy. You will be included as a sponsor for both our 5th Annual Cities in Space Conference and the 1st Annual Leadership Conference along with early access to our Academy.

SILVER SPONSOR: A DONATION OF \$10,000

This sponsorship level allows us to provide amazing venues for our students, giving them a professional conference environment in which to learn and be creative. Your donation will enable us to provide outstanding speakers and collaborative experiences with industry professionals. You will be included as a sponsor for both our 5th Annual Cities in Space Conference and the 1st Annual Leadership Conference.

BRONZE SPONSOR: A DONATION OF \$5,000

This sponsorship level will provide our students with access to meals and grants covering the cost of supplies enabling them to attend our conferences. Your donation will allow us to provide our eager students with the necessities they need to thrive. You will be included as a sponsor for either our 5th Annual Cities in Space Conference or the 1st Annual Leadership Conference.

Help us move up, out and beyond. Be a part of our stellar launch in 2019!

Launch Site:

steam-space.org/support-steam-space-and-cities-in-space

For more information on **STEAMSPACE** and our Cities in Space Conferences please visit these links or contact Holly Melear, Director & Founder of **STEAMSPACE** Education Outreach.

Always looking up.

Holly Melear

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2019 SPONSORSHIP PACKAGES

BENEFITS

GOLD
\$20K

SILVER
\$10K

BRONZE*
\$5K

EVENT PARTICIPATION

Exhibit Table for your organization	●	●	
Small Group Engagement with CiS teams and Ambassadors	●	●	
Event Recognition via shout outs at event and other STEAMSPACE fundraising events/printed material for Cities in Space	●		
Speaking Opportunities at Cities in Space ®, Leadership Conference and other STEAMSPACE events, guest opportunity for being a professional judge at Cities in Space ®	●		
Sponsorship recognition at all Cities in Space ®-related events.	●		
Sponsorship recognition at all Leadership Conference-related events.	●		

MARKETING & RECOGNITION

Your Logo on the STEAMSPACE website	●	●	●
Advertisement in the Cities in Space ® Program; Distribution of your organization's material at events.	●	●	●
Recognition via Social Media; Article recognition, radio recognition.	●	●	●

* Bronze includes 1 event and Gold/Silver include both Cities In Space & Leadership Events.



$$v_{\perp} = k \times v$$
$$v_{\parallel} = -\alpha(k \times v) = v - k(k \times v)$$



$$r = r_{\parallel} + r_{\perp}$$
$$r_{\parallel} = \eta(\hat{\eta}) \quad M \eta \hat{\eta}$$
$$r_{\perp} = -\eta \times (\eta \times r) = r - \eta(\eta \cdot r)$$
$$x \times y$$