

**SPACE
CENTER**
HOUSTON

20th Annual
see 
Space Exploration Educators Conference



Continuing The Dream
Thursday Session Booklet
February 6, 2014

Thursday February 6, 2014

7:15am	Check-in Begins
7:30am	SEEC 101 (recommended for all new attendees to SEEC)
8:00 am	Welcome Address and Key Note –Dan Rather
10:00am-11:30am	First Session
11:30am-12:30pm	Lunch (Buffet lunch in Astronaut Gallery)
12:45pm-2:15pm	Second Session
2:45pm-4:15pm	Third Session
4:45 pm	Dismiss (Bus Run Begins)
5:30 pm	Those staying for Epicurean will watch a film in Northrop Grumman Theater.
6:30pm-9:30pm	“A Taste of Space” Epicurean (Bus will run hotel loops)

Sessions will take place at Space Center Houston, JSC Gilruth and other JSC areas *8 hours CPE Credit

Session Selection

Selecting your individual breakout sessions is easy! Just read through this conference booklet to see the selections for each time slot. Then, use the “Organize Your Sessions” form on page 10 to organize your sessions. Finally, go online and make your session selections at <http://www.spacecenterprogs.org/seec/start.asp> Sessions that are full will not appear. It’s that easy! **Just be sure to move quickly as some sessions fill up fast.** Breakout sessions include NASA tours as well as the hands-on sessions. Tours fill up especially fast, so please plan accordingly. **(All tours require closed-toe shoes)**

If a session is full, don’t worry. Check with the Conference Help Table when you arrive to see if there are openings or watch the “swap” board for the session ticket.

If you have any questions, please contact us by e-mail at SEEC@spacecenter.org.

Johnson Space Center Tours:

Mission Control Tour

Once the manned spacecraft have launched, Houston Mission Control takes over. Visit this secure location and see the rooms where history happened. You will be able to see both Historic Mission Control and ISS Control rooms.

Neutral Buoyancy Lab

Take a trip to the largest pool in the world where astronauts practice for their spacewalks—the NBL. This facility is the underwater training facility for the astronauts and your chance to see state-of-the-art training—the next best thing to space!

Space Vehicle Mock-up Facility (SVMF)

Explore the training grounds for the astronauts. See full size mock-ups of the Space Station and Orion. It also includes several other small part task trainers and mockups.

Precision Air Bearing Floor (PABF)

The Precision Air Bearing Floor (PABF) is used for extravehicular activity (EVA) training, Intravehicular activity (IVA) training, and mass handling training. It is primarily a human factors training facility for microgravity operations. A major use is to train the astronauts in the importance of moving/doing things slowly in microgravity. It can demonstrate the validity of the three Newton's Laws of motion in microgravity.

Food Lab Tour

Yummy...Astronaut Food! Have you ever wondered how space food is prepared and packaged? Visit the food laboratory at Johnson Space Center and see first hand. Learn how nutritionists, dieticians, and engineers prepare food for flight.

Robotics Lab Tour

Space can be a dangerous place and there are corners that humans just can't reach. Come peek inside the robotics lab at Johnson Space Center and see what engineers have developed to aid the astronauts in construction and maintenance.

SAIL Tour

Shuttle Avionics Systems Laboratory: NASA's only facility for conducting full scale integrated flight hardware and software verification testing for all shuttle flights. The SAIL is a central facility where avionics and related flight hardware, flight software, flight procedures and associated ground support equipment are brought together for integration and mission verification testing.

IMPORTANT NOTICE!!! PLEASE READ CAREFULLY

- Your visit to the Johnson Space Center (JSC) is a special event. You will be entering working facilities subject to strict safety and security policies. Please follow the direction of your host escort at all times.
- It is essential that all members of the group stay together and not venture from their JSC escort. Wandering into restricted areas constitutes a security violation and could result in the termination of your visit.
- Your visit will require walking and standing for extended periods and may involve climbing several flights of stairs. Guests should wear comfortable, flat, fully-enclosed shoes (**no high-heels, sandals, flip-flops, slides, mules, Crocs, etc.**) during their visit. We also recommend that guests wear slacks (instead of shorts or skirts) as an additional safety precaution.
- Cameras are welcome in all facilities unless instructed otherwise. However, photography of individuals is discouraged without permission.

ATTENTION ALL NON-U.S. CITIZENS

If you are not a U.S. citizen, you must fill out a JSC Security Form in order to attend the NASA Tours. Please go to the SEEC website for more information and to download the form.

<http://spacecenter.org/education-programs/teacher-programs/teachers-seec/>

Follow us on Facebook

<https://www.facebook.com/groups/SEECATSCH/>

Thursday February 6, 2014

10:00PM – 11:30AM

Blast off to learning with Readers Theater

Adrienne Provenzano, Independent S.T.E.A.M. Educator

Tap into the power of the spoken word to inspire, engage, and educate! Participants write, read, rehearse, and perform STEM and space-themed scripts in a fun and supportive environment. Explore history and imagine future possibilities. Empower your students to create their own scripts. Read-to-use materials provided!

Grades: K-12

Subject: Science, Technology, Language Arts, Math, Fine Arts, Social Studies, History

Dreams Take Flight

Diana LeSeur, Mesa Public School

Colleen Howard, Mesa Public School

Soar into the future with inquiry-based flight/space activities and strategies that will energize student learning. Teachers will participate in hands-on STEM/STEAM projects using collaboration, communication and critical thinking. Go boldly back to the classroom and encourage students to make their dreams take flight and prepare them for Lift-off into the 21st Century!

Grade: 3-8

Subject: Science, Technology, Language Arts, Math, Social Studies, History

Ignite Student Interest in Space Science Careers!

Leesa Hubbard Sally Ride Science

Dr. Karen Flammer, Sally Ride Science/UCSD

Encouraging students' interest in science has never been more important. The demand for STEM professionals is expanding rapidly, yet fewer and fewer students are choosing to prepare for these important careers. Learn about a research based program, developed by Sally Ride Science, to help you introduce STEM careers into your current teaching practices. Participants will leave with a free book of Space Science careers.

Grad Level: 6-8

Subjects: Science, Technology, Math

Live from the International Space Station Mission Control

Patricia Moore, NASA's Digital Learning Network-JSC

Michael Hare, NASA's Digital Learning Network-JSC

NASA's Digital Learning Network (DLN) connects your students to NASA engineers, scientists and education specialists, utilizing web-based and standards based video-conference technologies. Learn about NASA DLN; experience how this free resource can be integrated into curriculum. Connect to a flight controller in the ISS Mission Control Center and appear live on NASA TV.

Grade Level: K-12

Making Colors: Color and Light in Science

Kana Takasu, Shimane University

Makito Yurita, Shimane University

This session bridges science and art by making color pigments from natural stones. Lascaux's cave painting was drawn with stone pigments, and it is one of the most primitive materials for painting. The session introduces history and culture around colors. We will make color pigments to paint artworks.

Grade level: 9-12

Subject: Science, Fine Arts, Social Studies

NanoRacks LLC, Houston Facility Tour (NEW)

Want to send your students' projects into space? NanoRacks have created low-cost opportunities for students to send their experiments to the U.S. National Lab within the International Space Station. Teachers will learn about the three main types of STEM opportunities offered to students by NanoRacks, a company devoted to allowing new users, from students to researchers, to conduct research, design experiments, tinker, make mistakes, and maybe realize wonderful breakthroughs in low-earth orbit and beyond.

Grades: 3-12

Subjects: Science

NASA's Resources for Educators

Elaine Lapka, NASA Educator Resource Center

ERC staff is your guide to NASA educational programs and standards-aligned K-18 teaching resources online, on paper, and on disc. Bring your preferred surfing device to this session to explore free online lessons, activities, simulations, and interactives for all disciplines, emphasizing STEM.

Grades: K-12

Subjects: Cross Curriculum

Our Place in Space-Exploring Our Amazing Solar System

Deborah Ericsson, Jefferson Elementary School

Participate in seven hands-on, minds-on, engaging activities to introduce young space enthusiasts to the wonders of their solar system. These motivating learning experiences are adaptable for use with students in grades 1-3. For lively "out of this world" lessons and a chance to win a stellar gift bag, don't miss this session!

Grades: K-2

Subject: Science, Language Arts, Math, Fine Arts

Physiology of Humans Living on Mars

Jami Sunkel, Space Foundation

Brian DeBates, Space Foundation

Explore the challenges to the human body traveling to Mars and the changes that occur as a result of living in a reduced gravity environment. Other effects will be simulated within the lesson, including stress on body systems, loss of muscle mass, and decreased bone density.

Grade: 9-12

Subjects: Science, Technology, Physical Education and Health

Plants in Space!

Michael Wilkinson, Ethical Culture Fieldston School

Investigate the effects of gravity and atmosphere on plants using Wisconsin Fast Plants. Participants will create simple labs that will yield results before the conclusion of SEEC14 that can be replicated in the classroom. Learn about plant research conducted onboard the Space Shuttle and International Space Station.

Grades: k-12

Subject: Science, Technology, Language Arts, Math, Physical Education and Health, Social Studies

Science is Cool with NASA's "Space School Musical"

Shari Asplund, NASA/Jet Propulsion Laboratory

The solar system comes alive in "Space School Musical," a fun, innovative, interdisciplinary approach to science learning. Kids watch the videos, learn the songs, do the activities, and perform the show themselves! Packed with content, the musical will take you and your students on a journey they won't forget.

Grade: K-12

Subject: Science, Language Arts, Fine Arts

Space Exploration Soaring across the Curriculum

Laura Kleven, Johnson Aerospace and engineering HS

Jill McKenna, Johnson Aerospace and engineering HS

In this session you will have the opportunity to become a student and explore space across the curriculum.

Activities will be from Science, Math, English Language Arts and Social Studies. You will experience the lesson as it is taught in all four classes. Come join us to see how we were able to integrate aerospace throughout our school. This session is sure to help you launch your students' interest in space science to new heights.

Grades 9-12

Subjects: Science, Technology, Language Arts, Math, Fine Arts, Social Studies

Space Riot

Marie Nickel' Woodlands Elementary

Plan your own full day Space Riot at school with your students. Astronaut training and other fun hands-on STEM activities can be adapted to your individual needs. Create a science experiment to participate in the Student Spaceflight Experiment Program that will go to the ISS. Handouts will be provided.

Subject: k-8

Subject: Science, Technology, Language Arts, Math, Physical Education and Health, Fine Arts

Star Energy and Evolution

Lynne F. Zielinski,, Margie Corp

Margie Corp., Orenic Intermediate School

Investigate and examine properties of energy conservation, light, and matter in the context of the life of a star. Using hands-on models, explore what mysteries of star birth and evolution can be explained using images taken by orbiting space telescopes and more. Ready to use lessons provided. Get star energized!

Grade:

Subjects: Science, Technology, Math

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Water Bots

Sara Malloy, SJC Aerospace Academy-NASA JSC
Education

From the oceans to space, dabble in this journey to study microgravity through underwater robotics. You will have a hands-on experience to learn the basics in electronics and soldering techniques to build your own circuit board. Explore our educator training opportunities in underwater robotics at San Jacinto College Aerospace Academy.

Grades: 6-12

Subjects: Science, Technology

Tours:

Mission Control
Neutral Buoyancy Lab
SAIL Tour

12:45PM – 2:15PM

Blue Marble Matches: Using Earth for Planetary Comparisons

Paige V. Graff, Jacobs JETS @ NASA Johnson Space Center

Join this hands-on, inquiry-based session and build a planetary comparison feature wall to learn about geologic processes that have sculpted the surface of Earth and other planets. Address NextGen Standards through student investigation projects that allow classrooms to request astronaut imagery from the ISS. NASA resources/handouts provided.

Grades: 6-12

Subject: Science

Clouducation...The Sky is the Limit

Debbie Zafar, Montessori Academy of North Texas
Brittany Board, Montessori Academy of North Texas

Get excited about clouds across the curriculum! Learn how clouds are formed, name the basic cloud types, classification of clouds, and about Cloud SAT and its functionality. Participate in exciting, hands-on science experiments, games, art, music, technology, and math activities.

Grades: K-5

Subjects: Science, Technology, Language Arts, Math, Physical Education and Health, Fine Arts

EarthKAM: Taking Pictures of the Earth from Space

Leesa Hubbard, Sally Ride Science
Dr. Karen Flammer, Sally Ride Science/UCSD

Your students can take pictures of the Earth from the ISS with NASA/EarthKAM! Learn how to get your students involved while participating in engaging, hands-on activities. Teachers will learn how EarthKAM engages students in understanding geography, maps and Earth's surface geology. They will use EarthKAM images to investigate features such as urban areas, water sheds, glaciers and river deltas.

Grades: 6-12

Subjects: Science, Technology, Geography

Extending Learning Through Augmented Reality

Jo Duran, Keller ISD
Kellye Tippitt, Keller ISD

Want to teach through Augmented Reality? Start here! We will share many apps and web 2.0 sites that can be seamlessly embedded into your curriculum and used across grade levels and content areas to increase student intrigue and engagement while providing opportunities for scaffolding and extension. Bring your own device.

Grades: K-12

Subjects: Technology

Miniature Pneumatically Controlled Canadarm

Stanley R. Taylor, Stanley R Taylor Communications

Make a miniature, pneumatically controlled Canadarm in a step-by-step process. I will simplify a complex scientific tool (made in Canada and donated to the U.S.A. for use on the ISS) so that students can make the working model with two movable parts.

Grades: 5-12

Subject: Science, Technology, Language Arts, Math, History

ISS CONSTRUCTION SIMULATION (Dive Session) (Double Session)

Craig Shannon, NBL Dive Master

Train like astronauts in this exciting session! You will participate in underwater training exercises using SCUBA gear in a local indoor pool. No previous experience necessary. *Bring a swimsuit and towel. (T-shirts not required but very helpful)*

Additional \$35 charge for this session. NOTE: This is a **double session** and is not available for registration online! (If you wish to register for this session you **MUST** pay online first. Once you have paid, your name will be added to the diving session list. Remember to leave the following time slot open on your session selection.)

Grades k-12

ISS Science – International Toys in Space

Susan Mayo, Barros Technology

The International Space Station has the unique ability to capture the imaginations of students. International Toys in Space compares the actions of toys on Earth with microgravity. This hands-on activity incorporates many disciplines, multiple grade levels, and the depth of concepts covered is teacher and student driven.

Grades: 6-12

Subjects: Science

Passport to Space

Jeannine Roseberry, Jefferson Elementary School

Bill Klein, PhD, Jefferson Elementary School

Passport to Space is the perfect session for young astronauts who want to explore space and visit Earth, the Moon, the Stars and beyond. Make and take projects for young scientists include ready-made space journals with personalized astronaut pictures, moon rubbings, mass and size comparisons of planets, constellation creations and more.

Grade: k-2

Subjects: Science, Language Arts, Math, Fine Arts

Rocks from Space - Borrow Lunar rocks in your classroom **Double Session* (NEW)*

Jaclyn Allen, NASA Johnson Space Center/JETS

Paige Graff, NASA Johnson Space Center/JETS

Come and learn about Moon rocks from NASA scientists! Become certified to borrow extraterrestrial rocks for your school or museum. Participate in hands-on activities that cover key processes in the formation of the early solar system. The content will help you understand the early formation of Earth and the Moon.

(Remember to leave the following time slot open on your session selection.)

Grades:K-12

Subjects: Science

Science on Flying, Falling, Spinning, Twirling

Katsuichiro Arimizu, Higashi Izumi Elementary School

Junko Fujibayashi, Ogaki Ehigasi Elementary School

Two teachers from Japan will demonstrate how Japanese traditional toys and flying seeds help us understand the principles of flight and stability and explain how they help us in advancing our aeronautical endeavors.

Grades: K-12

Subjects: Science

Shoot for the Stars!

Christine Graham, McKinney ISD

Dee Mock, Houston ISD

Shoot for the stars integrating STEM! Measure angles, distances, and liquids by launching rockets. Make cartoons, and create comics describing lunar phases and tides. Create models, Venn diagrams, and space theater. BYO Device—take home engaging activities that will investigate our Solar System.

Grades: 3-5

Subjects: Science, Technology, Language Arts, Math

Space Exploration Education Strategies: An International Perspective

Alex Blackwood, International Education Business

Partnership Network

Val Caldwell, International Education Business Partnership Network

The International Education Business Partnership Network (IPN) works with education partnerships across the world, sharing good practices and developing new innovative approaches to learning and teaching. As part of an International Development Program IPN offers learning weeks for teachers and encourages educators, practitioners, and policy makers to attend and present at bi-annual international conferences.

Grades: 9-12

Subjects: Science, Technology, Math

STAAR Wars: May THE Foldables be with you... (NEW)

Joyce Hill, Highland Middle School

Rebecca Morland, Highland Middle School

Participants will make a foldable that will make reinforce Earth and Space Science content, learn acronyms to use for reinforcement, and develop sentence starters for use in the classroom. Great, Hands-on, classroom used and tested materials! Door Prizes and giveaways.

Grades: 3-5

Subject: Science

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TechNOWlogy

Christi Lesikar, Education Consultant

Carol Hordge,, Education Consultant

Finally, a session you can use when SEEC is over or better yet still going on. You have been introduced to all these wonderful ideas and want to put your new knowledge to work. Participants will use Pinterest, Twitter, and Edmodo.com, and should bring a laptop or tablet.

Participants who have used Edmodo are encouraged to select another session; most of the time will be spent on setting up an Edmodo classroom.

Grades: 6-8

Subjects: Science, Technology

To Infinity and Beyond: The Journey of a Model Rocket

Brian Krauklis, Katy ISD

Stacey Levin, Katy ISD

Become a rocket scientist (literally) and have a blast as we build and launch Estes model rockets. Use model rocketry to teach Newton's three Laws of Motion and demonstrate how NASA gets astronauts and their equipment into orbit. Model rockets are provided along with the fun.

Grades: 3-12

Subjects: Science

Up With STEM!

Lisa Seay, Clyde Boyd Middle School

Jeffery Krisman, Business Development Group

Developing curricula around problem-centered STEM is no problem in Lisa Seay's wacky world of inquiry learning. Math teachers--you aren't left out! Throw away your worksheets and "drill and kill" as Lisa shows you a different way to teach math...and that way is UP!

Grades: 6-8

Subjects: Science, Math

Tours:

Space Vehicle Mock-up Facility (SVMF)

Robotics Lab Tour

Food Lab Tour

Precision Air Bearing Floor (PABF)

2:45PM – 4:15PM

A FABulous Time with Engineering Design Challenges

Holly Mentillo, Ocean Breezes ES, NASA NEAT

Betty Bigney, Dixon ES, NASA NEAT

Try your hand at designing, building and testing as you learn about the Engineering Design Process. Multiple activities will be sampled and even more given on the free CD.

Grades: 3-5

Subjects: Science, Technology, Language Arts, Math

Be A Space Engineer. LEGO Bricks in Space!

Angelo Cassaburri, NASA/JSC Ed Branch

Test your imagination and learn how micro-gravity affects "LEGO Bricks in Space." Build and test simple machines using LEGO bricks and watch videos of the International Space Station astronauts building and experimenting with the same LEGO brick machines. Compare your results on Earth with astronauts in orbit.

Grades: 3-5

Subject: Science, Math, Technology

Blue Marble Matches: Using Earth for Planetary Comparisons

Paige V. Graff, Jacobs JETS @ NASA JSC

Join this hands-on, inquiry-based session and build a planetary comparison feature wall to learn about geologic processes that have sculpted the surface of Earth and other planets. Address NextGen Standards through student investigation projects that allow classrooms to request astronaut imagery from the ISS. NASA resources/handouts provided.

Grades: 6-12

Subjects: Science

Come Fly with Us to the Edge of Space

Sharon Eggleston, Maine Space Grant Consortium

Diane Bowen, Maine Space Grant Consortium

Travel to the edge of space to see what harsh conditions can support life. Engage your students in authentic scientific research experiences. Challenge students to look beyond Earth's boundaries to seek answers to questions 'Are we alone, Does life exist elsewhere in our universe, What is life, What is an Extremophile?'

Grades: 6-12

Subjects: Science, Technology, Math, Engineering

Grants: Workshops, Trips and Camps- Oh My!

Barb Gosney, St. Thomas Episcopal Parish School

The session will use discovery learning in order to help the attendees find various grants, Opportunities (Workshops, classes, trips and camps, and write the grants in the session.

Grades: K-12

It Looked Like Spilt Milk

Brian DeBates, Space Foundation

Jami Sunkel, Space Foundation

Explore the effects of the Sun on humans through the concepts of light and shadow. You will learn how to explain ultraviolet light to young students through experiments with nature paper. We will also explore the danger of solar radiation to astronauts using UV beads.

Grades: k-2

Subjects: Science

Keep Your Kids' Eyes on the Skies

Cyndi Shaver, Central Appalachian Astronomy Club

Jane Lynn Squires, Central Appalachian Astronomy Club

Me? Start an Afterschool Astronomy Club? Are you crazy?? Of course we are, but after attending this session, you will be well equipped and on your way. We will walk you through over fifteen hands-on lessons to hook your kids and keep their eyes on the skies. You might even win a real cool door prize or a Galileo scope!

Grades: K-8

Subjects: Science, Technology, Math

Learning in Microgravity: From Drop Towers to Zero

Kaci Heins, Northland Preparatory Academy

Becky Stark, Becky Stark

Microgravity is a unique environment that can be difficult to simulate here on Earth, let alone in a classroom. We will share the various ways NASA simulates microgravity, how you can create your own drop towers, or even fly on the Zero G plane with a student experiment like we did.

Grades: K-12

Subjects: Science, Technology, Language Arts, Math

Light & Color

David Temple, Longview HS

Jennifer Smith, Longview HS

An interactive workshop that investigates light. We will cover the way in which light is formed, the different types of spectra, and how light interacts both additively and subtractively.

Grades: 9-12

Subjects: Science

Living in Space

Heather Paul, NASA Johnson Space Center

This presentation covers the past, present, and future of life support and habitability systems required to keep humans alive and happy while living in the extreme environment of space.

Grades:3-12

Subjects: Science, Technology

Reading, Writing and NASA Resources

Dee McLellan, NASA JPL Solar System Educator and Jackson Middle School

Jan Schendel, Jackson Middle School

Reading and writing – how do we help middle school students get motivated to master these skills? Answer – NASA Resources. In this workshop we will discover how to inspire students to learn reading and writing strategies by integrating NASA missions. The Comet Chronicle from the Stardust-NEXT mission, MoonKAM mission, Mars Curiosity, and Space School Musical from Solar System Exploration will all be used in this workshop to teach these important language arts skills.

Grades: 6-8

Subjects: Science, Language Arts

Space Night

Janice Katz, Davenport School of the Arts

Marian Gilmore, Inspiring Educational SySTEMs, Inc

Learn to coordinate, facilitate and manage a Space Night for your school that will involve students, staff, administration and community. Participants go through a timeline of what it takes to run a Space Night, and then go over two hands-on activities to use during Space Night. Several other activities will be available to see and ask questions about. Space Night is an exciting way to bring Space to your community and promote the importance of Space Education and Space Exploration.

Grades: K-8

Subjects: Science

Space Weather: Updates from the Sun!

John Hehr, University of Arkansas, Geoscience

Lynne Hehr, Arkansas NASA ERC and STEM Center for Math

The energy output from the Sun has a major impact on the Earth. Join this interactive session that focuses on 1) the electromagnetic spectrum and 2) the impact from the Sun's energy or "space weather" on the Earth atmosphere system.

Grades: 6-12

Subjects: Science

Teaching Astronomy From a Zip Lock Bag

Catherine Ryan, Alvin High School

Nina Corley, O'Connell College Preparatory School

Finding hands-on activities to do in an Astronomy/Space Science class is hard for any new teacher. There are many activities on the Internet, but who has time to search for them? This presentation will provide a CD with over 20 different hands-on activities ready to be printed out and laminated that you can store in zippered bags and use year after year to enrich your space curriculum. Save yourself hours of research time, and experience some great hands-on activities to help your students learn and dream big!

Grades: 6-12

Subjects: Science

Teaching from Space

Becky Kamas, NASA Johnson Space Center

Join NASA's Teaching From Space office as we show you how to bring human spaceflight into your classroom! Participate in hands-on STEM activities, and learn about NASA-unique opportunities and experiences. Our door prizes are out-of-this world, so join us and help inspire the next generation of explorers!

Grades: K-12

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Neutral Buoyancy Lab

SAIL Tour

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- Shoot for the Stars!

- Space Exploration Education Strategies: An International Perspective
- STAAR Wars: Let the Foldable be with you
- TechNOWlogy
- To Infinity and Beyond: The Journey of a Model Rocket
- Up With STEM!
- TBD (Empty slot)

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Join the SEEC Facebook group:

<https://www.facebook.com/groups/SEECATSCH/>

