



CURIOSITY UNLEASHED

The Show

U · T · A · H

Presented by Paul Brewer & Brooklyn Tanner



Contents

Description of STEM Show	3
Influence in the Past Three Years	4
Detailed Outline of STEM Show	5
Video Clips	8
Lesson Plan	9
Contacts & Letters of Recommendation	10
Cost & Conclusion	18

The STEM Show Influence

An Educational and Entertaining Assembly for Students K-6

Paul the Magician and Brooklyn the Scientist use their engaging personalities and mind-boggling talents to inspire students to delve into Science, Technology, Engineering, and Math. This entertaining, **45-minute assembly** includes magic, comedy, prizes, and a classroom companion lesson plan for the teachers. **The entire school participates verbally in the show**, with over 10 students being invited to assist in the action on stage. All students receive a mathematical magic trick to take home and introduce the concepts they learned to their families (<https://www.utahmagic.com/the-stem-show>).



The assembly was written in 2016 by Paul Brewer and Brooklyn Tanner. Together they have **45 years of experience** entertaining children around the world and degrees in Theater, Education, and Child Development. The show has been performed over a hundred times for audiences of 30 to 1200 students. Paul and Brooklyn's electric dynamic engages the students from start to finish. Paul's baffling magic and witty humor makes it feel like the party of the year, while Brooklyn's clear and thorough teaching skills leave the students fired up about STEM. The show is currently available in English and Japanese.

In 2018, The STEM Show was **performed in 65 schools and inspired 40,000 students** to get involved with Science Technology Engineering and Math, inside and outside the classroom. With funding provided by corporate sponsors, there was no cost to the schools. The show was featured at STEM FEST, Spike150, and numerous libraries, Family STEM Nights and after school programs.

For the 2019-2020 school year, 125 schools have already requested the program, representing 19 school districts in the state of Utah. We have spreadsheets detailing the number of schools served in the past and contact information for schools to receive the show this

school year. This documents are easily shareable as they have been in the past for **real time communication with the STEM Action Center.**

With funding, the program is on pace to educate over

100,000 students about the importance of STEM this year!



The STEM Show Overview

The STEM Show includes highly visual presentations that teach important STEM concepts. The show is detailed below, which is updated yearly.

- Preshow
 - STEM Banner Background and laser light show (introduces theme and creates interest)
 - Watering the Flower (STEM analogy introduction)
- Introduction
 - Appearing Water with Wilting & Growing Flower illusion

- "A Flower get water from its STEM.

A flower gets a strong stem by planting a seed in good soil and giving it sunlight and water every day. Just like a plant, you are growing! A strong STEM will give you the power to accomplish your goals; like going to college, having a fun job, and building a family. The stem of your education is Science, Technology, Engineering, and Math; which are the water and sunlight you can use every day to grow stronger and smarter."



- **Science**

- "Science is the study of how and why the world works. We use science by asking questions to discover the cool things around us, like appearing bunnies! Let's try another experiment..."

- Test Tube Bunny: a bunny magically appears in a test tube with the help of an onstage lab assistant!
(sparks questions, i.e. "Where did the bunny come from?")
Discussion on the importance of life sciences.

- The Spinning Disc & Magic Boomerangs
(fun experiments and optical illusions to introduce the scientific method)

- The Scientific Method:
 - Ask
 - Guess
 - Do a Test
 - Observe
 - Answer



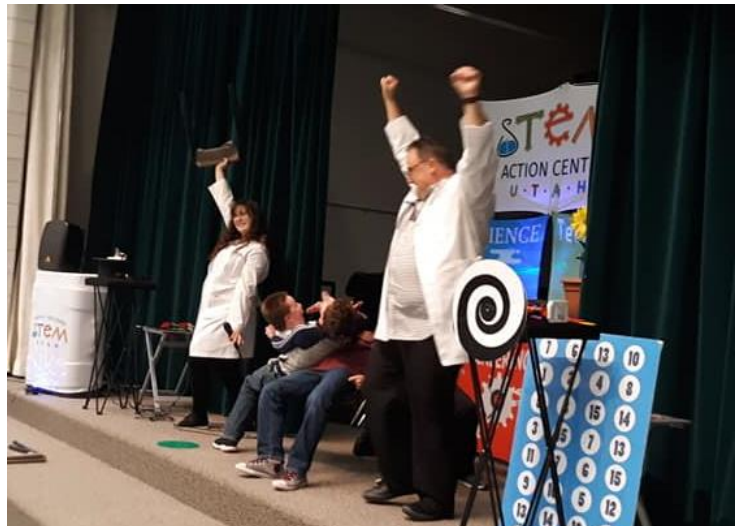
- **Technology**

- The phone rings onstage; it's Alexander Graham Bell! (discuss invention and innovation, by using the example of the evolution of the telephone to the smart phone we use today)
- "Technology is the creation of tools that make our lives better. In technology, we have invention and innovation. Invention means to make something new, and innovation is to make something better or use it in a new way. Technology is a part of your day, every day! For example..."
- Magician's invention Snake Cage: the "snake" nearly escapes, but with the help of on-stage scientists, inventions and innovations are made to save the day.

- **Engineering**

- “Technology is powered by engineering. Engineers are problem solvers, they make things work! Engineering is about using the right parts in the right way-- in order to accomplish a task and make something useful.”

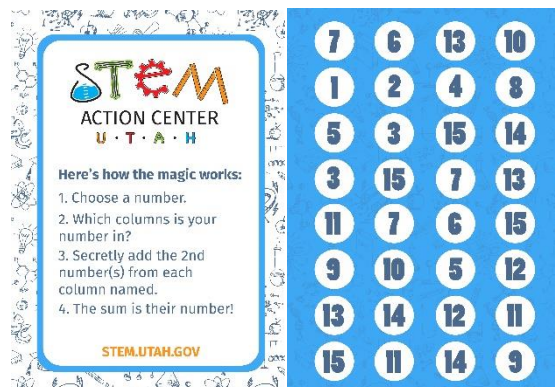
- Chairs to Table
experiment: four students become engineers as they work to transform four chairs into a table, with a hilarious twist (problem-solving and making things work).



- Note the structure of the on-stage equipment and props (mechanical engineers build physical things, computer engineers make our apps work).

- **Math**

- “Raise your hand if you love Math? What about Food, Sports or Music? Math is used in Science, Technology, Engineering, and just about everything we enjoy! Cooks have to use math to make delicious food. Athletes use math to measure distance, keep score, and play better at every game. We use math in music to decide timing, speed, and rhythm! Math is the magic that makes up the things we love!”



7	6	13	10
1	2	4	8
5	3	15	14
3	15	7	13
11	7	6	15
9	10	5	12
13	14	12	11
15	11	14	9

- Math is Magic! Pick A Number Trick: a student has their mind read when they choose a number, then the whole school gets to learn how to make the magic happen through math, and take their own mathematical magic trick home to try on their families.
- **Closing:**
 - Summary and Review of Concepts
 - Balloon to Dove Production: in an incredible finale, Paul gives a final motivating and funny speech about how working hard, studying every day, and asking questions made him magic. If the students do the same, all their dreams can take wing!
- **Sample Videos:**
 - KUTV 2 News Feature (2018): <https://kutv.com/features/stem/magicians-share-the-magic-of-science-with-kids>
 - Show Clips (2019): <https://photos.app.goo.gl/tEVVunvFVMdjNHrTA>
 - The STEM Show Launch (2016): <https://www.youtube.com/watch?v=RrdGsE8xyIo&feature=youtu.be>

Classroom Companion for Teachers



SCIENCE

What you saw in the Show:

- Magic Boomerangs Illusion
- Spinning Disc Illusion
- Test Tube Bunny

Related Content:

- The Scientific Method
- Perception, Illusion, Movement
- Discovery of the Natural World

Key Vocabulary:

- Science is how and why the world works

TECHNOLOGY

What you saw in the Show:

- The Evolution of the Telephone
- The Innovative Snake Can

Related Content:

- Social Application of Technology
- Influence of Technology on History
- Research and Development
- Invention, Innovation, Experimentation

Key Vocabulary:

- Technology is the inventions and innovations that make our lives better

ENGINEERING

What you saw in the Show:

- Chairs to Human Table
- Unique Structural Engineering of Show Set, Props, and Equipment

Related Content:

- Design of Engineering
- Many Types of Engineering: Mechanical, Structural, Computer, Electrical, etc.
- Troubleshooting, Research, Experimentation and Problem-solving

Key Vocabulary:

- Engineering is problem-solving and making things work.

MATH

What you saw in the Show:

- Equating the Perfect Cookie Recipe
- Math Magic Mind Reading Chart

Related Content:

- Abstract and Quantitative Reasoning
- Order of Operations to Solve Problems
- Graphing in Columns and Rows
- Math Application to Society: Food, Sports, Dance, Magic, Art, Music, etc.

Key Vocabulary:

- Math is the numbers, patterns, and shapes that explain the world we live in.

Response & Letters of Recommendation

"I wish to thank you for your recent STEM magic assembly that you were able to bring to Foothill Elementary. Our students thoroughly enjoyed his STEM presentation. Paul has a way of engaging the students and keeping their interests peaked. **He was able to work well with students volunteers, and to help students see the connections between their world and the world of STEM.** His magic show was a highlight of our school year and was a fun way to involve all students in the curriculum. He reinforced concepts that are core related and helped students to see the connections between what their teachers have been teaching them and hands on application. Most of all, Paul's excitement for STEM helped the students to be interested in the lessons he was teaching. Thank you for bringing this enrichment opportunity to our school. Sometimes our school struggles with the ability to be able to bring in **solid opportunities for student to learn and have fun at the same time.**"

Thank you for enriching our school,

Dave Lee Principal, Foothill Elementary

David.Lee@besd.net 435-734-4916



Governor's Office of Economic Development

BUSINESS • TOURISM • FILM

State of Utah

GARY R. HERBERT
Governor

SPENCER COX
Lieutenant Governor

Q. Val Hale
Executive Director

Tamara L. Goetz
STEM AC Director

April 23, 2019

Esteemed Educator,

I am writing to both verify Ms. Brooklyn Tanner's satisfaction of the 70-hour internship threshold requirement, and to thank you for the opportunity to have counted Ms. Tanner among the Utah STEM Action Center's core education outreach team. Through her dedication, vision and unfettering resolve, Ms. Tanner advanced our mission to increase equity and access in STEM by a measure of nearly 10,000 students in a few short months! Whether on the court at half-time during Vivint Arena's high-energy STEM Education Night with the Stars, or within the tiny Fillmore Library, Ms. Tanner epitomizes what all educators strive for yet few achieve: resonance with learners of all ages, from all walks of life, and in all settings. Her delivery of core scientific principles through hands-on demonstrations is the ultimate fusion of fact and fun, and she's building an avid fan base.

An outstanding young woman with incredible initiative, impressive aptitude, and a capacious propensity for service and personal development, Ms. Tanner has far exceeded expectations. She demonstrates a passion for teaching that is about as magical as the curriculum she's conjured for our STEM assemblies. But I'm sure she'd be the first to say there's a science to it, and I wouldn't disagree: Combine a high acumen for critical reasoning, working knowledge of what shapes the wonders of our natural world, sharp science skills, wonderful wit and engaging stage presence, and the outcome is Ms. Brooklyn Tanner (possibly one of the elements not yet named on the Periodic Table—the other quite probably being her sidekick, Mr. Paul Brewer). Within different communities, and in different capacities – ranging from visits to schools all over the state to the creation of content aligning with core-standards curriculum – she has consistently served our mission to promote inclusive, engaging STEM learning among Utah's K-12 students in the interest of developing a STEM-ready talent base to fill thousands of current and future local jobs in supporting Utah's ongoing economic success.

Reliability, integrity, versatility, humility and sincerity, as well as follow-through and an indwelt sense of civic responsibility are among Ms. Tanner's repertoire of shining strengths. She is an incredible individual whom I am honored to know, and commend without reservation. I welcome you to contact me at 801-538-8747 should you have any questions.

With great sincerity and appreciation,

Katherine Kireiev
Communications Manager
Utah STEM Action Center

"We loved your STEM show! The way you incorporated the scientific method into your presentation was educational and entertaining. **You had our entire student body engaged in your STEM activities, including the sixth graders who all raised their hands to do a math activity!** You are a master at what you do. It was definitely worth the wait! Thanks so much,"

Bonnie VanOrden Lakeview Academy STEM coordinator

bvanorden@lakeview-academy.com 801-331-6788

"Your assembly today was wonderful! We had **so much great feedback** from it from students and teachers. Thank you so much for making the trip out to our school. My first graders loved it and are very excited about STEM! "

Amy Sorensen Eureka Elementary

asorensen@tintic.org 435-433-6927

"I would like to send a special thanks to the STEM Action Center of Utah and to Century Link for the amazing assembly that was presented at Calvin Smith Elementary today. Paul and Brooklyn did such an amazing job. The program was very engaging to the students and was also educational. They did a good job at demonstrating that the scientific process does not only have to be used in the science classroom, that it is a model that can be used to solve any problem or answer any type of question. My students **have a better understanding as to how STEM subjects play a very important role in their lives.** I would love to have the opportunity to have the assembly presented to students every year. Thanks for the amazing and interesting assembly."

Cindy Dunn, Principal Calvin Smith Elementary

cadunn@graniteschools.org 385-646-5020

"I just wanted to take a minute and thank you for your time today. Your STEM show was amazing! Our students were talking about it even this morning (the day after). I ended up doing the math magic trick about 100 times at home with my two kids who were in attendance.

Not only did you **discuss the importance of STEM, but you made it fun and engaging**. Every single one of my 150 students were engaged the entire time. That alone is a magical feat!

As a principal in a rural school with limited funds, I can't thank you enough for being willing to come to our school and work with our students. They deserve every opportunity that other students in our state, especially those in urban and suburban areas receive. So, we especially appreciate the generosity of those who donate to causes such as yours for it is about the only way we experience these types of events.

I hope that funding is available for years to come!"

John Hughes, Faculty, Staff, and most importantly- students!

Cottonwood Elementary Orangeville, Utah

johnh@emeryschools.org 435-748-2481

"Mr. Brewer and the STEM Action Center of Utah presented outstanding assembly at our school today. Never in my 24 years of teaching can I remember a whole school experience that engaged and excited the entire range of elementary students from kindergarten through sixth grade more. The presentation was exceptional in all ways. It easily captured the attention of every student in the auditorium while reinforcing those STEM concepts. Mr. Brewer and his scientist partner [Brooklyn] did not just entertain our students, they excited them about the scientific method and other

STEM concepts. After the assembly, **students were eager to ask questions, engage in discussions, research, and find out more** about what they saw and learned. Even though students were constantly squealing from excitement during the assembly, the behavior management that Mr. Brewer and his partner utilized appropriately focused students back to the task. The kids were quick to quiet down and listen because they did not want to miss a moment of the show!

Overall, it really was the best kind of learning experience for kids because it sparked interest through humor, curiosity, discovery, and play. But don't take my word for it, here's **what my second graders were saying** after the assembly today:

"I like math and the game made it fun. I can't wait to try it at home."

"I liked the card trick because I thought they were looking, and **then I saw it was math** and I was like, Oh so that's how you did it!"

"I knew that engineering was about building, but it was cool how things could stack even though the things looked like they were light or heavy."

"My favorite part was the spinning wheel. **It blew my mind**. I can't stop thinking about that one and why it worked. Is it because my eyes needed to adjust?"

Thanks again to Mr. Paul Brewer and the STEM Action Center of Utah for providing a top-notch learning experience for students. "

Sandra Zakowski

Bountiful Elementary

szakowski@dsdmail.net

801-402-1350

"Thank you for providing such a quality STEM assembly for our school. The information presented was student appropriate and a lot of fun! I wanted to send you a few comments from teachers and students:

I thought the assembly was great! When we got back to class all of my students knew what STEM stood for and they were talking about the Scientific method...as well as the bunny and the bird. I already had a science activity planned, but I added the optical illusion with the yellow and red boomerangs so the kids could have another activity to take home and do with their parents. The kids LOVED it!

Jill Gibson 2nd grade

A good science class/demonstration always awakes interest. **I could see even most distracted student paying attention carefully.** But the most interesting was how to connect STEM areas in one.

Jose Manuel Escobero 6th grade

I thought it was well done with a good mix of entertainment and education. They did well with audience participation and management as well.

Kammie School Substitute

The assembly was fascinating! I appreciated that humor was used throughout, and the magic was so impressive. Connecting the STEM meaning and scientific method with the tricks was an excellent way to engage the students and help them see the STEM subjects in a new light.

Diana 4th Grade

It was awesome! All my students enjoyed it. They learned what STEM stands for while they were having fun. Paul was hilarious and I loved that he made some jokes also for adults so we can also enjoy the show.

I would recommend this to everyone and I think that was a good way to engage students to the STEM. Thank you!

Evelyn 1st grade

When we got back to class I had several kids telling me that it was awesome!! One said it **was the best assembly they have seen!**

Karen Kelley 3rd grade

It is the only assembly to date that Emme (she is in second grade) has come home and told Brandon (her dad) about.

Courtney Bills Reading Specialist

My students absolutely loved it and I did too. I loved the jokes for us (older people). My students couldn't stop talking about it. After the assembly, student council interviewed them for announcements which you can all watch on Monday.

Meg 4th grade

How can we do that [engineering] thing the older boys did? I want to learn how to do that! It was fun to learn about some scientists in a fun way! Griffin"

Jill Gibson STEM Lead/Coordinator

North Davis Preparatory Academy

jgibson@northdavisprep.org 801-547-1809

Cost & Conclusion

The total cost of each assembly is \$395. This price is completely inclusive of expenses in the show: labor of two entertainers, travel, equipment, maintenance, student giveaways, and teacher lesson plans. As it has been in the past, the cost can be covered by corporate sponsors in companies willing to support students' education and growth in STEM.

Paul and Brooklyn are impressed by the work and invested in the message of the Utah STEM Action Center. As entertainers and educators, the success of students is a core value that we strive to contribute to daily. We are invested in continuing to strengthen and evolve the STEM show to best fit the needs of the students of Utah. It would be our great honor to continue to be a part of the action at STEM.

Paul Brewer

Brooklyn Tanner

801-835-4223

801-414-7100

UtahMagic.com

MagicBrooklyn.com

paul@utahmagic.com

magicalbrooklyn@gmail.com