

## Jodie Guillen, THE Astronaut Teacher

- Middle School Science Teacher
- MAD SCIENTIST EXTRAORDINAIRE
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- Professional Memberships include:
  - Civil Air Patrol for Educators (CAP)
  - International Society for Technology in Education (ISTE)
  - National Science Teachers Association (NSTA)
  - New Mexico Academy of Science (NMAS)
  - New Mexico Science Teachers Association (NMSTA)
  - Discover CON Team Advisor and Inspiring Force
    - Launching Dreams with Science, Technology, Engineering, Arts, & Math
    - <http://www.discoverconteam.org/jodie>
- I excel at incorporating movies and popular culture into my teaching. Imagine “The Hunger Games,” “The Martian,” and “E.T.,” meets The Periodic Table of the Elements and Solar Technologies in SPACE!!! :)
- Project-based learning NINJA!
- Grant-Writer EXTRAORDINAIRE
  - I’ve brought in tens of thousands of dollars in grant funding to my Title One, minority-majority school!



Each summer the US Space and Rocket Center partners with Honeywell Hometown Solutions to bring 200 of the most incredibly talented educators, hand-selected from applicants that span the globe, to Huntsville, Alabama for a week of the most innovative, and rigorous, professional development for teachers that exists in the world today. Once I discovered THIS awesomeness, I just KNEW I had to apply! To my absolute amazement, I was one of the chosen few . . . and my life has never been quite the same! Even though my dream to go to Space Camp was over 30 years in the making, I am LIVING PROOF that dreams really DO come true!!!

The narrative below was written in response to one of the questions required as part of my Honeywell Educators at Space Academy application.

I remember sitting in my 6<sup>th</sup> grade classroom, all the way back in 1986, watching with excitement as Christa McAuliffe boarded the Space Shuttle Challenger. I had always dreamed of going to Space Camp, but as one of four kids of a 1<sup>st</sup> grade teacher and a small business owner, the money simply was not there. This was the closest I was going to get and I WAS NOT MISSING A SECOND!!! I saw the rockets begin to fire up, watched the smoke billowing in clouds around the Space Shuttle Challenger, and listened intently as the countdown began. 10-9-8-7-6-5-4-3-2-1 . . . and then, right before my very eyes, history happened! We had liftoff!!! I will never forget those 72 seconds of breath-taking awesomeness . . . and then, at second 73, I watched tears fill my teacher's eyes. However, my middle school experiences simply had not prepared me to comprehend what was happening. Slowly, and tragically, the reality of that fateful day in history began to set in. Once the dust had settled, my teacher gave us the opportunity to share our feelings as we faced one of the greatest tragedies of our young lives. As I walked down the hallway after school that day, I knew that I wanted to be just like Christa . . . I wanted to be a teacher.

Well, life has taken its twists and turns, but I'm proud to say that 30 years later I'm doing that very thing . . . TEACHING!!! I am lucky enough to spend my days with 150 of the most AMAZING 6<sup>th</sup> and 7<sup>th</sup> graders you'll EVER meet! I LOVE teaching them science, and each and every day I strive to bring science to LIFE with the most hands-on, engaging lessons that I can! In fact, every day on January 28<sup>th</sup>, I tell them this story, and the impact Christa and NASA continue to have on education all around the globe!

I'm working as hard as I can to IGNITE the scientists, engineers, and SPACE PIONEERS of tomorrow, sitting right in my classroom!!! As their teacher, I commit to continue to pursue moments, both large and small, in order to encourage and inspire them, as well as allowing them to develop the skills and traits that will one-day launch them into the STEM-related careers that so desperately need people just like them!

The kiddos of room 127 and I are dreaming BIG DREAMS over here in the middle of nowhere New Mexico! Ready or not, Mars . . . HERE.WE.COME!!!

. . . and can someone please pass the Tang! :)



This link will take you to a blog post that was written about my work with students by Michael Starobin, who makes movies for NASA!!!

<http://1auglobalmedia.com/blogcontent/somewhere-in-new-mexico-the-first-astronaut-to-mars-learns-algebra>

This link will take you to the press release regarding The Cherri Brinley Outstanding Educator Award I just received from The Space Center in Houston, TX.

<https://spacecenter.org/news-release-cherri-brinley/>

This is a link to my interview about my experiences at Space Camp that was featured on both KRQE-13 and KASA-TV 2, local news affiliates with audiences that reach throughout the state of New Mexico.

<http://krqe.com/2016/06/21/new-mexico-teacher-fulfills-dream-of-attending-space-camp/>

This link will take you to the article my local newspaper published on my AWESOME ADVENTURES at Space Camp. This article was also picked up by the Albuquerque Journal and published state-wide.

[http://www.mvtelegraph.com/news/education/moriarty-mid-school-teacher-attends-space-camp/article\\_224b6624-5999-11e6-883f-efcdd2d89dfe.html](http://www.mvtelegraph.com/news/education/moriarty-mid-school-teacher-attends-space-camp/article_224b6624-5999-11e6-883f-efcdd2d89dfe.html)



**Honeywell Educators**  
3 hrs · 🌐

"As a teacher my job is to help my students find their paths in life. The investment that Honeywell made in me is totally worth it. I feel I can inspire my students in new and exciting ways." – Jodie Guillen, New Mexico

Hear from four #STEM educators about their unforgettable experience at #HESA2016:



**Honeywell Educators at Space Academy Re-ignites a Passion to Teach**  
honeywell.com

👍❤️ 56      4 Comments   4 Shares

Here's the link to an article that included comments from my interview, featured on Honeywell's webpage with an audience that spans the globe.

<https://www.honeywell.com/newsroom/news/2016/07/honeywell-educators-at-space-academy-reignites-a-passion-to-teach>

Here are links to some videos I made that highlight my work with my students!!!

<https://youtu.be/L-gXjZX2L1c>

<https://www.youtube.com/watch?v=ZuZiUBTyuao&feature=youtu.be>

This is a link to the press release for the 2016-2017 Jacobs Educator Award!!!

<http://education.indiana.edu/news/2016-11-01-jacobs.html>



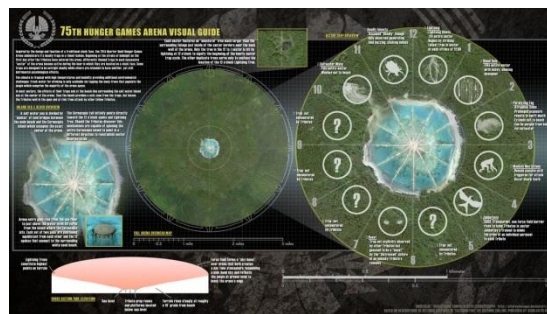
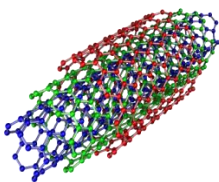
This link will take you to the article written about my New Mexico Academy of Science (NMAS) 2016 Outstanding Science Teacher Award!!!

[http://www.mvtelegraph.com/news/education/moriarty-science-teacher-earns-award/article\\_4aa17f66-a5fa-11e6-995c-efc1a2380a4d.html](http://www.mvtelegraph.com/news/education/moriarty-science-teacher-earns-award/article_4aa17f66-a5fa-11e6-995c-efc1a2380a4d.html)

**May the Odds Be Ever in Your Favor**

### **Subject Area(s)**

**Physical Science/Science and Technology**



**Grade Level** 6 (6 - 8)

### **Summary**

Through this unit of study, students discover the impact that nanotechnology, the science of the very tiny, has had on current trends in materials design. After beginning with an exploration of physical and chemical properties, students then discover how those properties are altered at the nanosize as well as discovering how small nano really is along the way. Students also make connections to the innovations that are changing the very technology they use today, and discover the impact that those innovations in technology have had on society. Finally, students use that newly acquired knowledge to work through the engineering design process to create blueprints for a prototype of a tracker jacker (genetically engineered wasp) to be released into the arena, which remains at the core of the popular novel "The Hunger Games," made popular through a movie sharing the same title.

“The Hunger Games,” written by Suzanne Collins, is a post-apocalyptic novel set in the distant future. The capital city of Panam sits at the center of twelve districts, with each one of those districts able to recount a past riddled with conflict and pain at the hands of the capital. In order to squelch any further rebellion in the future, each district is required to send one male and one female tribute to participate in an annual fight to the death, otherwise known as the Hunger Games. This novel follows the life of Katniss Everdeen, a teenage girl living in the poorest of 12 districts, who volunteers as the female tribute from District 12 in order to save the life of her little sister.

**Imagine the following scenario:**

**Plans are underway for the 76th annual Hunger Games. Katniss, along with the other tributes, have already been effective at rendering the current tracker jackers useless. Therefore, the Game Makers are looking for a vendor to create a new and improved version of the tracker jacker to place in the Arena. However, the material used to cover the familiar structure of their body must be made from a new, innovative material that will prove to be impenetrable to the previous tactics of the tributes. Your team must use the information you have regarding carbon nanotubes, and their use in design, in order to develop a prototype of your newly designed tracker jacker to present before a panel of Game Makers.**

**The clock is ticking, and only one design will be chosen, “May the odds be ever in your favor.”**

### **Engineering Connection**

Engineers take the knowledge they have regarding the structural make-up of different materials, and apply this knowledge to strengthen the overall design/structure of whatever task is set before them, from discovering a new material strong enough to provide the make-up of the cable that will one-day lift the space elevator, to providing the amount of support required in top athletes’ shoes. Engineers do a ton of research, test theories, develop prototypes, re-design those prototypes, and finally present those ideas to their clients; innovating the very breakthroughs that are changing the way we live, work, and play along the way. This approach, which has come to be known as the engineering design process, will be the backbone of everything that students discover throughout this unit of study.

### **Engineering Category**

1. Relating science and/or math concept(s) to engineering
2. Engineering design process

### **Keywords**

carbon, carbon nanotubes, chemical property, element, engineering design process, nanometer, nanoparticles, nanoscale, nanotechnology, periodic table of the elements, physical property

### **Educational Standards**

#### State STEM Standard

New Mexico, science, 2003, (grades 5-8)

Strand I: Scientific Thinking and Practice Standard I: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.

5-8, Benchmark I: Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings.

3. Justify predictions and conclusions based on data.

New Mexico, science, 2003, (grades 5-8)

Strand II: Content of Science Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.

5-8, Benchmark I: Know the forms and properties of matter and how matter interacts.

2. Use properties to identify substances (e.g., for minerals: the hardness, streak, color, reactivity to acid, cleavage, fracture).

4. Know the differences between chemical and physical properties and how these properties can influence the interactions of matter.

New Mexico, science, 2003, (grades 5-8)

Strand III: Science and Society Standard I: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.

5-8, Benchmark I: Explain how scientific discoveries and inventions have changed individuals and societies.

2. Describe the technologies responsible for revolutionizing information processing and communications (e.g., computers, cellular phones, Internet).

#### ITEEA Standard

ITEEA, 2000: Technology and Society (Standard 6) - Students will develop an understanding of role of society in the development and use of technology.

In order to realize the impact of society on technology, students in grades 6-8 learn that:

D. Throughout history, new technologies have resulted from the demands, values, and interests of individuals, businesses, industries, and societies.

#### NGSS Standard

MS-ETS1-1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

#### CCSS Standard

CCSS.ELA-LITERACY.RST.6-8.1

Cite specific textual evidence to support analysis of science and technical texts.

CCSS.ELA-LITERACY.RST.6-8.3

Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

CCSS.ELA-LITERACY.W.6.7

Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.

#### **Related Lessons & Activities**

Related Lessons

- Carbon Nanotubes Unleashed
- Metamorphous of Design - Client Needs

Related Activities

- Nanoscale – Measuring the Very Tiny
- Mutation of the Jackers

#### **Contributors**

Jodie Guillen

#### **Supporting Program**

Energizing Engineering Education (E3): An RET site at the University of New Mexico investigating energy research and engineering practice, The University of New Mexico, School of Engineering & College of Education.

**Acknowledgements**

This curriculum was developed under National Science Foundation RET grant # EEC1301373. However, these contents do not necessarily represent the policies of the National Science Foundation, and you should not assume endorsement by the federal government.

**Classroom Testing Information**

This unit was tested in a 6<sup>th</sup> grade science classroom with approximately 25 students at Moriarty Middle School in Moriarty, New Mexico. Moriarty Middle School is a majority-minority, Title One School located in a rural community. This unit was classroom tested in the fall of 2015, as a lead-up project to the actual release date of the final movie in the Hunger Games trilogy, Mocking Jay Part 2, on November 20, 2015.