



# Scale up your STEM!

*Facilitators*

**Aleli Colon (Van Buren MS)**

**Kim Scheerer (NM MESA)**

June 1 : 2018

# Introductions [us & your table]

*Aleli Colon*



**VAN BUREN**  
MIDDLE SCHOOL



*Kim Scheerer*



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June 1 : 2018

# Timeline [1:45-2:45]

- introductions (us & your table)
- activity overview
  - goals & objectives
  - materials & methods
  - results & conclusions
- STEM village build!
- links... to NM STEM Ready! standards
- teacher modifications and SHARE OUT...

# Activity Overview [goals]

- Identify teamwork methodology
- Learn equity skills
- Create a mini-village during our work time
- Enhance our engineering connections and abilities
- Increase teacher & student morale and...
- *To have fun in the classroom!*





# Activity Overview [goals]



The screenshot shows the UNM School of Engineering website. At the top is the NM MESA logo with the text "New Mexico MESA" and the tagline "Building tomorrow's mathematicians, engineers and scientists. . . Today!". Navigation links include STUDENTS, ALUMNI, ADVISORS, and STAFF. A secondary navigation bar includes Home, Regions, News, Events, Resources, Support/Volunteer, About, and Contact, along with a search bar. The main content area features the date "Saturday, April 28th 2018" and the event title "UNM School of Engineering: Engineering Energy Day". A sidebar on the left lists event details: "UNM School of Engineering: Engineering Energy Day", "Saturday, April 28th 2018", "UNM Centennial Engineering Center", "300 Redondo W Dr. Albuquerque, NM 87106", and "Google Map». The main text states "Registration is open" and provides links for "National Society of Black Engineers", "Hispanics in Engineering & Sciences Organization", and "UNM School of Engineering". It also mentions a "FREE day of STEM-success and fun!". The location is "The Centennial Engineering Center @ UNM". Registration check-in is from 9-9:45 am. The event runs from 9 am to 3 pm for grades 6-12, with "FREE Parking Map HERE".

**New Mexico MESA**  
Building tomorrow's mathematicians, engineers and scientists. . . Today!

STUDENTS ALUMNI ADVISORS STAFF

Home Regions News Events Resources Support/Volunteer About Contact SEARCH WEBSITE

Saturday, April 28th 2018  
**UNM School of Engineering: Engineering Energy Day**

«More Past Events

**Event Details**  
**UNM School of Engineering: Engineering Energy Day**  
Saturday, April 28th 2018  
UNM Centennial Engineering Center  
300 Redondo W Dr.  
Albuquerque, NM 87106  
Google Map»  
All students must register individually and parents

**Saturday, April 28th 2018**

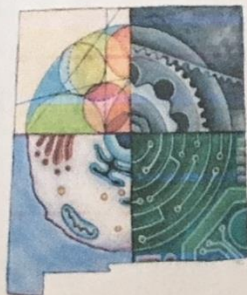
**Registration is open** – click the button to the left to join student group mentors from the [National Society of Black Engineers](#), [Hispanics in Engineering & Sciences Organization](#) and other student groups at [UNM School of Engineering](#) for a **FREE** day of STEM-success and fun!

**Location: The Centennial Engineering Center @ UNM**

Registration check-in, day of event: 9-9:45 am

9 am – 3 pm ♦ grades 6-12 ♦ [FREE Parking Map HERE](#)

**NM SCHOOL OF ENGINEERING**

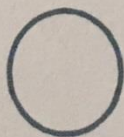


## STEAM challenge!

Have fun with your team of 3-5! Your village needs to include the following:

- ☐ build your village component to scale [1 cm = 12 inches]
  - 12 inches = 1 foot
  - 10 feet = one story of a building
- ☐ include a lighting feature
- ☐ the type of building should be obvious through your building's signage
- ☐ ALL team members names are to be displayed
- ☐ Be sure to check in with a UNM School of Engineering student mentor to get your planning and build certified stickers below!

Engineering  
Planning  
Sticker →



Engineering  
Build Certified  
← Sticker

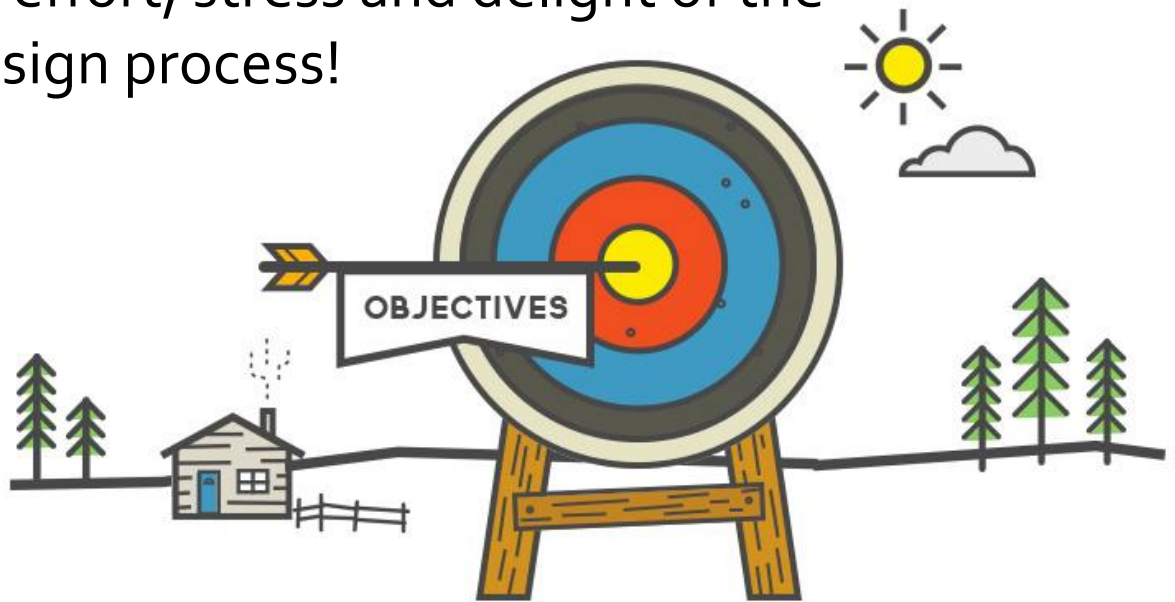
+ advanced challenge : motor in motion △



***note:* scale is mentioned; team size is shared and there are 2 check-points built in**

# Activity Overview [objectives]

- Work with other teachers cohesively.
- Use creativity to link students to STEM skill-sets.
- Gain confidence with interdisciplinary hands-on STEM activities and NM STEM Ready!/NGSS links.
- Experience the effort, stress and delight of the engineering design process!



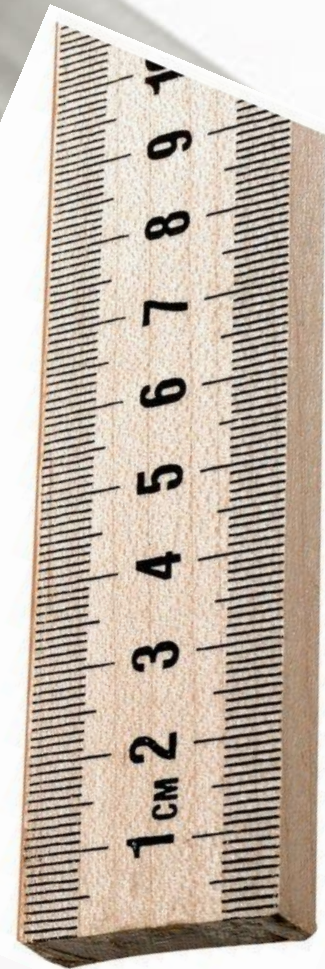


# Activity Overview [methods]

- Farm Fields/Agriculture Barns
- Hospital
- Community Center/Library
- College/University
- School (K-12)
- Police or Fire Station
- Residential Neighborhood
- Restaurant and/or Food Vendor Area
- Grocery Store
- Professional Sports Arena
- **Wildcard!** [talk to your teacher about your idea]



# Activity Overview [materials]



# Activity Overview [materials]



Use chips as an *equity* builder. **ONLY** those students with the correct colors showing at the resource table can collect supplies. *Change* the colors every couple of minutes to keep students on their toes!





# Activity Overview [results]





# Activity Overview [results]



# Activity Overview [results]





# Activity Overview [results]





# Activity Overview [results]



# Activity Overview [results]



# Activity Overview [results]

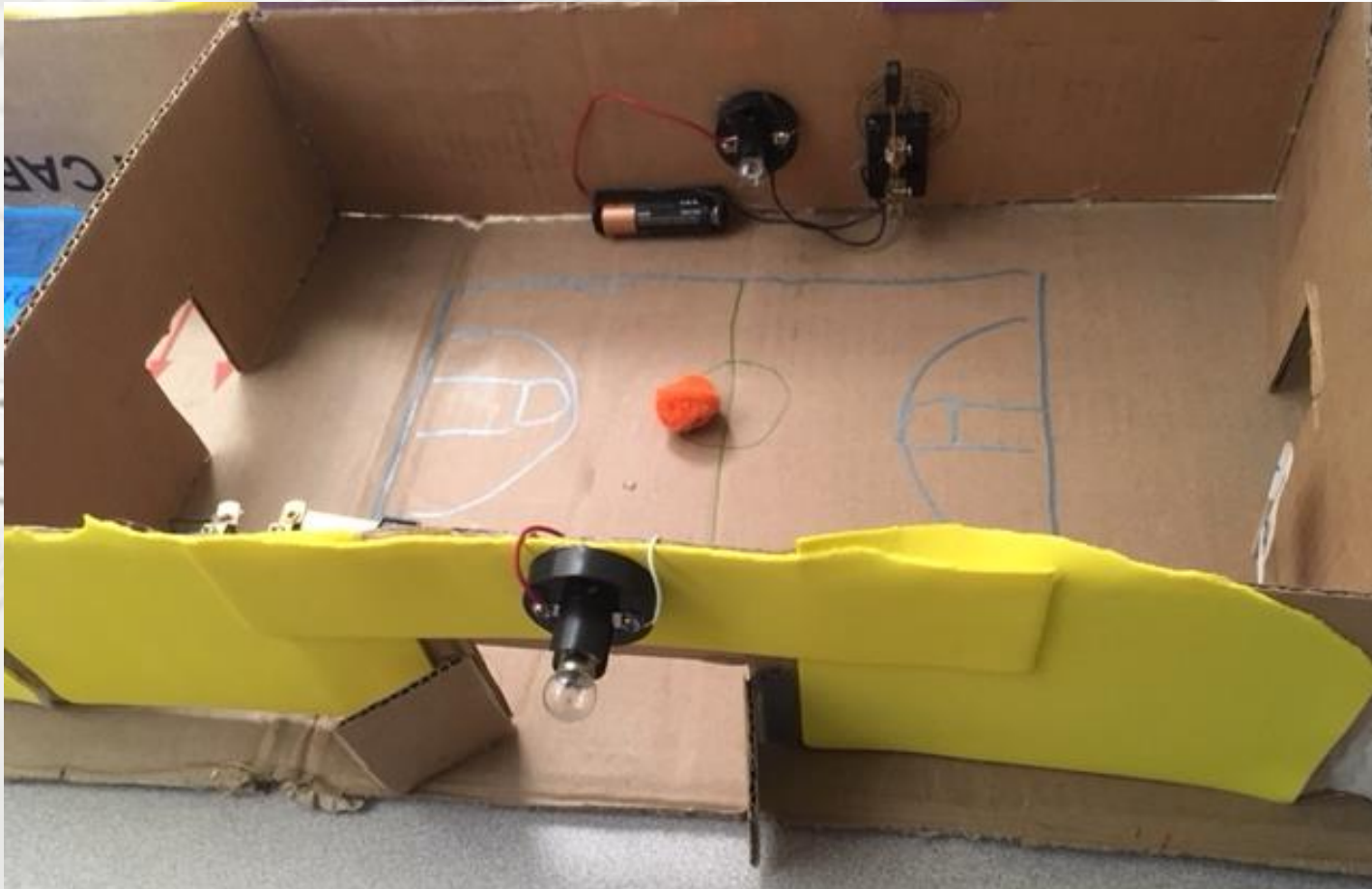




# Activity Overview [results]



# Activity Overview [results]



# Activity Overview [results]





# Activity Overview [conclusions]

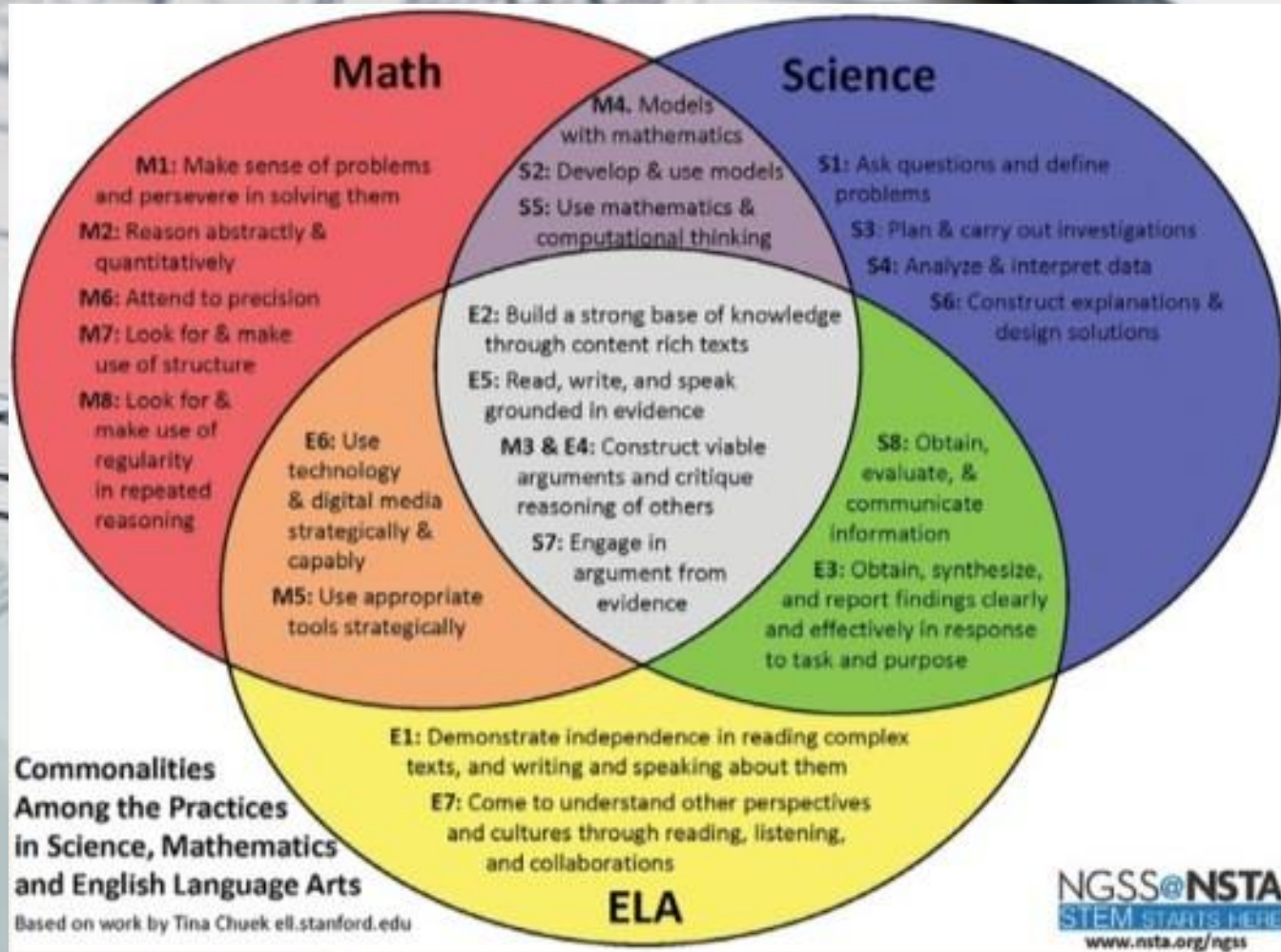
- Work in teams of 3-5.
- Create buy-in with students' families providing materials.
- Provide adequate time to plan and build.
- Be *creative* with your resource table.
  - hot glue guns, markers, scissors and stencils
  - *additional*: knick knacks & paddy whacks
- *optional*: add electrical and/or solar circuitry
- Provide *mentoring, enthusiasm & support...*
- Create time for reflection.
- Find space and share with your larger community!



# Teachers... [BUILD!]



# Links... [NM STEM Ready!]





# Links... [NM STEM Ready!]



**PERFORMANCE EXPECTATIONS** - *Students who demonstrate understanding can:*

**MS-ESS3-3 NM.** Describe the advantages and disadvantages associated with technologies related to local industries and energy production.

**HS-LS2-7 NM.** Using a local issue in your solution design, describe and analyze the advantages and disadvantages of human activities that support the local population such as reclamation projects, building dams, and habitat restoration.\*

**HS-SS-1 NM.** Obtain and communicate information about the role of New Mexico in nuclear science and 21st century innovations including how the national laboratories have contributed to theoretical, experimental, and applied science; have illustrated the interdependence of science, engineering, and technology; and have used systems involving hardware, software, production, simulation, and information flow.

**HS-SS-2 NM.** Construct an argument using claims, scientific evidence, and reasoning that helps decision makers with a New Mexico challenge or opportunity as it relates to science.



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# Teachers... [GALLERY WALK]

About 590,000,000 results (0.60 seconds)

**Gallery Walk.** This discussion technique allows students to be actively engaged as they **walk** throughout the classroom. They work together in small groups to share ideas and respond to meaningful questions, documents, images, problem-solving situations or texts.

Gallery Walk - The Teacher Toolkit

[www.theteachertoolkit.com/index.php/tool/gallery-walk](http://www.theteachertoolkit.com/index.php/tool/gallery-walk)



# Teacher... [modifications]

- Expand with community titles/roles:
  - **Mayor** presents the city “overview”
  - **Architect, Resource Engineer**, etc.
  - **Community Development officer** connects with the larger regional area
- *See, Hear, Feel & STEM* reflection cards
- ???









# Teacher... [SHARE OUT]









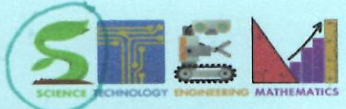


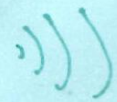
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# Reflection [index card]

 see The Mona Lisa	<p>Circle the STEM letter that is of the most interest to you.</p> 
<p>List 1 relevant experience from today in the see, hear &amp; feel boxes.</p>	
 hear The dinosaur roaring	 feel A davinci invention

 see Art is awesome.	<p>Circle the STEM letter that is of the most interest to you.</p> 
<p>List 1 relevant experience from today in the see, hear &amp; feel boxes.</p>	
 hear Got to watch a movie.	 feel Awesome, cool Pen.

 see explosions! 	<p>Circle the STEM letter that is of the most interest to you.</p> 
<p>List 1 relevant experience from today in the see, hear &amp; feel boxes.</p>	
 hear BOOM! from the explosions!	 feel  shock wave from explosions





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