

Project Summary-

The major activities I did with this project spanned over the course of two science units.

Project #1 - Force and Motion - KEVA Blocks

I began with my Force and Motion Unit and used the KEVA blocks requested to create a hands-on assessment for my students to demonstrate their knowledge of Newton's first three laws of motion as well as the terminology that goes along with the understanding of the laws of motion and force. I created a week long assessment where we began working on using the blocks to create "contraptions" that used the laws of force and motion. We spent two days becoming familiar with how the blocks worked and it really spurred some great conversation about "why" the blocks worked the way they did! We then planned a full day where I split my classes into 8 groups and they created "contraptions" using the KEVA blocks as well as the small KEVA balls (similar to a ping pong ball) -- They created their designs as a team and then reported how the different ideas/terms we studied were used (Please see attached lab reports I used with my kiddos as well as the documents we used to become familiar with the blocks). We spent a full morning working on our contraptions and then our other 5th grade classrooms/teams came through as my students explained and demonstrated their Force and Motion knowledge through their designs. It worked out PERFECTLY and I really feel that my students learned more by physically working on a project than just reading. My students LOVED working with the blocks and have really demonstrated their knowledge through their work!

Project #2 - LIGHT - (LASER MAZE - Beam Bending Logic Game)

The second project I did with my students went along with our study of Light. We cover the concepts of Refraction/Reflection as well as how light behaves in water and other objects. I used the laser maze to have my students explain the refraction and reflection of light - The game offers the kids the opportunity to complete "challenges" - There are over 60 -- As they worked through the challenges, I had them EXPLAIN why the light worked the way it did. They played with their table groups and experienced hands on how light bends and reflects. I also added the additional piece of "water". We added a little cup of water to check and see how

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light moved then. It was a very practical and fun way to reinforce what they need to know. After we worked through many of the challenges in the game, I asked them to create their own and explain and share with another group. When we did that, the kids were really able to use their knowledge to share and explain with their classmates. Overall, things went very well. I think next year however, I will definitely have more of a step by step write up, lab sheet to help guide the “create your own challenge” portion of our assignment. I would like the students to be able to fluently write about their knowledge as well as show it during a game. I may have them work in ELA to create a slide presentation explaining their learning in the game and in our unit.

Setbacks-

Regarding my projects, I really didn't have any setbacks which was incredibly fortunate. I was able to purchase and use the items I requested right away with my units. I am incredibly thankful for the opportunity to have these activities to use with my students. I think if anything, I was able to make some great networking connections. The makers of the KEVA blocks actually have resident educators that help support and provide instruction and ideas for teachers. I connected with Mr Ken Scheel, he's been a super help emailing and helping by providing ideas/challenges for my students to complete.

No setbacks either with the Light Maze game, it is much easier to use and required much less “pre-loading” for instruction.

Publicizing-

If I were to publicize my project I'd call it “Contraption Connections” for the Force & Motion unit - just because my students were able to really make connections with their learning and their fun project.

I would call the Laser Maze project/learning challenges “EnLIGHTening Experiences” for obvious reasons.

Measures used to evaluate Progress-

In order to measure the progress of my students with our Force and Motion project (KEVA Blocks) I used a “teaching tweet” at the beginning of the unit to check for prior knowledge - I asked several questions to see what my students knew and

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what I really needed to work on with them to make sure they were prepared for their upcoming science unit. Many of my students knew of the terms but really didn't understand what they meant in practice. After our unit and after our project (creating the contraptions with the KEVA blocks) I used our "lab report" to check for understanding at the end of the unit - I feel that the block project showed me more learning than if I just gave a paper and pencil test - Students were able to really show what they knew and their understanding in a physical way -- not only by creating the contraption but by sharing their knowledge with other teachers as well as other students.

With the Laser Maze, I did not do as much "pre-loading/assessing" of knowledge because some of what we covered should have been from previous years (I will change that for next year). Also, with the Laser Maze, I plan to create more "challenges" and maybe make a tournament of it next year -- seeing who can use the most "reflecting and refracting" to create a challenge for a classmate. Overall, it was a great (and very fun) way to enhance the Light Unit we are required to teach. My students did very well on our final assessment -- some even mentioning their Light Maze challenges as examples on the written portion of our final assessment.

Project Budget :

\$500.00

KEVA Block Contraption sets (8) - Actual Cost \$399.60

Laser Maze Beam Bending Logic Game (4) - Actual Cost \$119.80

Shipping: \$ 0 (because of Cyber Monday Coupon)

\$20 off coupon with Cyber Monday :)!!

Total Amount of order: \$ 499.40 (Thank goodness for sales!!)

(note: Formatting is “off” due to copying and pasting my assignments/lab sheets into this document report.)

Keva Contraption - Mini Challenge

Warm ups !

TODAY You and your group will be practicing with a few challenges to warm up for our Contraption day!

You will need to have your mini-challenges signed off on by Mrs Calaway OR Miss Wiebrecht before you may move on to the next.

These activities will help you prepare for creating you BIG contraption on Friday! A couple of things to keep in mind...

1. You need to work together as a **TEAM** . KEVA blocks are super fun BUT are easy to knock down. Make sure you are including everyone in your group to reach your goal!!
2. Pay close attention to the instructions/tips & tricks that are here for you. When you are building vertically, it's important to pay attention to your design or it will fall apart in the end.
3. Measure using a block when creating a tower --- you don't want to make a big wall for your tower only to find out that it won't work. Paying attention to detail is super important!

Ready????? Work with your **TEAM** to complete the following! Use the instruction booklets in your kit to help you design your challenge well.

Challenge	Teacher signature
<p>1. Create a “race” set up for your two balls. Make sure to create an incline for them to gain momentum/Speed .(pg 3)</p>	
<p>2. Create a structure that causes the ball to CHANGE directions. (See pg 5)</p>	
<p>3. Create a shaft where the ball will bounce from side to side as it travels down to the bottom. (see pg 8)</p>	

<u>BONUS CHALLENGE:</u> 4. Place two desks 36 inches apart and build a bridge between them.	
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Day Two Contraption Warm-ups

Today's instructions are the same as yesterday. You are to complete the challenge and have your teacher "sign off" once your challenge works. Remember to be careful, follow the instructions and Do your best to work as a TEAM!!!


Challenge	Teacher Signature
1. Create a structure in which you can make the ball move two feet and land in a bowl. (see pg. 12)	
2. Create a cascade make sure to include a "funnel" to catch your KEVA ball. (See pg 6)	
3. Combine a ball dispenser and a bounce plate design to get your ball from one place to another.	
4. Combine TWO of the structures you created making sure that your ball can easily travel to the end.	
5. Combine THREE of the structures you created making sure that your ball can easily travel from the beginning to the end.	

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Challenge Day -- Today is an EXHIBITION not a
COMPETITION!

Today is NOT about winning, but rather showing off what you know about Force and Motion by creating your KEVA Contraption with you TEAM !! You will have time to build and work together to create a contraption that demonstrates the following in your design. You need to be prepared...AS A TEAM to share with your classmates how your contraption demonstrates what we have learned. The items you need to show/demonstrate and explain are listed in the following chart. Below please find an example of HOW you are required to report your information regarding your contraption....

EXAMPLE:

Term	Illustration	Description
slope		I demonstrated a slope in my contraption using towers that slowly got shorter --it created a hill or a slope that allowed

		the ball to begin to roll downward.
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Term	Illustration	Description
Inertia		
Potential Energy		
Kinetic Energy		
A force in motion tends to stay in motion unless acted on by an outside force.		

A force in motion tends to stay at REST unless acted on by an outside force.		
A FORCE is needed to move an object...		
For every ACTION there is an equal and opposite REACTION		
Acceleration		

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Speed		
Gravity		
Friction		
Momentum		

Personal Note: -- Thank you so very very much for providing the funds for my students to create and learn. I appreciate it more than you know and I know my

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students do too! They were so incredibly excited when our packages came and even more excited about their learning in science class knowing that what they were doing was special and just plain fun! I am grateful to you all for considering my grant proposal and for allowing teachers like me to do things that go beyond just plain book learning in the classroom -- You've helped me make learning fun, practical and engaging . Thank you so very much from not only me but from all of my students as well!

