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Technology in Early Childhood Center

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Refer to TEC Center's blog post for tech integrated play and lesson planning ideas: bit.ly/TECQPlan
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Getting Started w/STEM (S/E/M+T) Integrated Play and Lesson Planning

Your Name: Cathy Patterson

City and State: Evanston, Illinois 60202

Class or Grade you teach: PK-8

District Name or #: Archdiocese

Name of School: Pope John XXIII School

Play or Lesson Plan Title: How can balls move through space using simple machines?

How many years have you been teaching? 20

How long have you been using tech w/children? 20

Play or Lesson Focus: **What question(s) do you want to help children investigate?** Objective: Student will demonstrate an understanding of force and motion, Newton's 1st Law of Motion, inertia and gravity and share their knowledge with others. Exploring concepts/vocabulary: motion, mass/solid, liquid, gas, molecules, force, push/pull, stationary, classification	• Science • Technology or Media Literacy (how to use tech or make tech) • Engineering • Math
Play or Lesson Objective ○ **Is this really one play or lesson plan?** ○ Or does it need to be divided into several different plans	This project was a unit on force, motion and energy and the use of Google for Education tools. It was completed over several class periods.

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with their own objectives?	
Standards your plan meets (STE, NSGG, Advanced Ed STEM Certification) **NOT NECESSARY BUT FOR SOME PROGRAMS IT IS IMPORTANT TO LIST WHAT STANDARDS YOU ARE MEETING**	NETS 1.Empowered Learner: c.use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways 2. Digital Citizen: b. Engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices C.demonstrate an understanding of and respect of the right and obligations of using and sharing intellectual property 3. Knowledge Constructor C. curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions
How will you help document children's wonder and curiosity?	The students shared their work and knowledge through Shared Google documents via Google Classroom. This was also part of the learning process for this project--using a live google document, learning to work on it together, using Google draw and creating a drawing, learning to copy and paste their information from one document to another.
What questions will you ask to help them go deeper in their investigation?	The students were asking the questions, so I followed their

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	lead-- Would the weight and/or surface of an object make a difference? Would the distance you pull back on the rubber bands make a difference? How should we place our hands on the giant slingshot in order to have the best release? What's the best design for a slingshot?
What STEM vocabulary and terminology do you need to introduce?	These words were part of the students' exploration and discovery--these are the definitions they put together through their research 

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	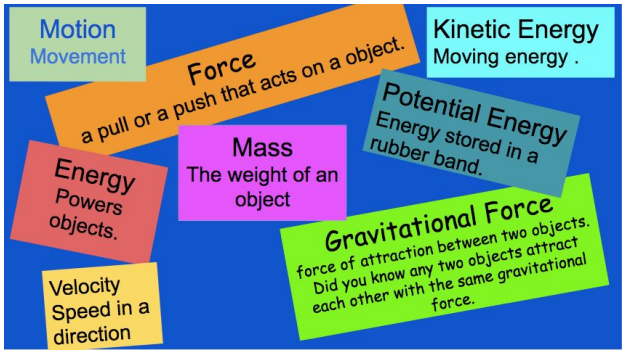 Students learned how to use the Google for Education Apps: Learning the email and password Accessing Google Classroom Accessing and using Google Documents--Live documents Accessing and using Google Slides Accessing and using Shared Tables--staying in own cell Accessing and using Google Draw Accessing and using Text boxes Accessing and using various fonts, colors, spell check tools Seesaw Students learned about a new means of sharing through an online app. They enjoyed using the app and have inquired if will can continue to use it next year.

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What language/vocabulary might be helpful for children as they describe their processes for play/work/learning? **Will children need to be introduced to any new vocabulary or terms?** ❑ If so, when and how should you introduce these new words?	Vocabulary listed above
Where and when will the learning and playing experience occur? ❑ Inside or outside? ❑ Will children design the space with you?	Set-up-- 33 students broken into 6 groups-- gave each student a number and had the groups arranged around the room--students went to their group as soon as they had a number (teacher can observe who's in the group and be able to arrange groupings for the success of all the students). Students worked at tables or on the floor.
How much facilitation do you want to have in your play and learning experience? ❑ Does the facilitation need to be with an adult? ❑ Does the facilitation need be with a more experienced peer? ❑ Does the facilitation need to be with an older child?	The students were the driving force in this project, I was there to guide and facilitate, which was needed more in the beginning (groups learning to work together) and at the end (to finalize data sheets and group presentation). The students were remarkable with each other, sharing ideas and getting input from all members of the group. Most groups were very good about sharing jobs, so everyone had a voice in the project. As the teacher I constantly went around the room, checking in on progress and assisting out in the hall for the various slingshot trials. I assisted the groups at various times as needed, but most of the time the students were engaged and on task. The time always went so quickly, which was a disappointment to them.
How much of your time will be technology how-to focused and how much will be play or hands-on focused?	This was a very hands-on experience that married technology with creative experiences.

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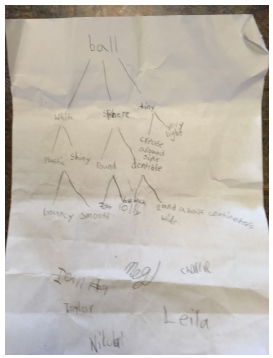
❑ What materials do you need to prep or have nearby? ❑ What new vocabulary has to be introduced? ❑ What materials can the children create or make with tech tools, loose parts or art materials? ❑ What type of sensory experience are you creating?	Activities 1-7 Activity 1: They started by receiving a ball to use and explore. Students created classification sheets to describe their ball. The students asked for a scale to weigh their balls.   Tested a theory--Students felt that the heavier ball would fall and land faster than the light ball--a slow-motion video gave them their answer Slow-motion video The students discovered that the balls fall at the same time, or would have if they had been released at the same moment. Activity 2: The students used technology to view various videos about forces. Videos are listed under Activity 2 on the Activities Sheet.

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	Activities 1-7 Students were given a store bought sling-shot to get an idea of how they work, they used them to fly their own balls Activity 3: Running trials and collecting data Data Sheet Activity 4: Create a Slingshot --description of their slingshots and drawing Activity 5: Create a giant slingshot Video of Beach ball in Cafeteria Video of Teacher Video of Beach ball outside Activity 6: Sharing our Discoveries -- using Google slide presentation Used Wordle for a group reflection on our learning experience Activity 7: Students were able to see what our partner schools were doing and try their activities. The students thought it was awesome that they got to see the other students' projects using Seesaw.

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What materials do I need? **Examples include:** ❑ tech tools ❑ Tablets i.e iPads, Fire, etc. ❑ apps ❑ Robot or tangible tech ❑ laptop ❑ desktop computer ❑ Software ❑ website ❑ document camera	**List or post pics of your materials here** Chromebooks Google Classroom- assignments Balls used for exploration--unique to each group Ping-pong balls that were the same or everyone Homemade slingshots--unique to each group (popsicle sticks, tape and rubber bands) Store bought slingshot Paper/pencils/clipboard Measuring tape

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❑ projector ❑ microscope ❑ flashlight/headlamp/solar lantern ❑ Circuits ❑ Do You Have Flow? Idea book ❑ ProTips ❑ 10 mm LEDs are best for small hands ❑ 3M Copper Tape is worth the $$ it just works better as tested by Museum of Science & Industry ❑ Don't forget batteries ❑ robotics ❑ other tangible tech ❑ tablet stand or tripod? ❑ green screen materials? ❑ writing and notetaking? ❑ do students need to draw or take notes on paper? ❑ markers, pens, pencil, tablet styluses? ❑ whiteboards? ❑ pretend play materials? ❑ engineering materials? ❑ Ramps and/or blocks? ❑ good junk/loose parts? ❑ pulleys? ❑ measuring tools? ❑ rulers, measuring tape, yarn, tape, blocks? ❑ natural materials? ❑ found objects from nature?	Giant slingshot (30 sets of 20 rubber bands put together and connected to a carabiner) Helmet Giant beach ball Skate board An adventurous teacher Video--using iPad, phones and Seesaw scale

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❏ literacy materials?
  ❏ books or mentor texts, including digital mentor texts i.e. podcasts, blog posts, ebooks, digital photography?
❏ are the materials you are using culturally appropriate?
  ❏ do the images reflect the diversity of the children you work with? what about gender and stereotypes? Do you need to make culturally appropriate materials?
  ❏ are they available in several languages for dual-language learners? And do the images match the words? i.e.: if it says el gato is there a picture of a cat not ice cream?	

What previous experience do children have with technology tools?
❏ What are their digital skills?
  ❏ Are they in exploring stage i.e. learning the functions and how they respond?
  ❏ Are they in early integration stage i.e. documentation? Have they mastered the tool yet?
  ❏ Are they able to innovate yet? i.e. create and make or fully integrate into pretend play?
	The students became more adept at signing into and using Google classroom as the weeks went by--every class another group member had to sign in.
	The students used the Seesaw app and didn't have any problem with it.
	The students are continuing to learn how to manage a live shared Google document--it is a process that some have mastered and others are still learning. The students are very good about helping each other in the assigned groups.

What hardware and software do you currently have access to in your classroom i.e. what tech are you using? ❏ What parts of the hardware and/or software do you anticipate causing your students trouble? ❏ What needs to be charged or updated before you use your tech tools with students?	The students used a Chromebook and a Macbook--which both needed to be charged. We experienced one day when the Internet went down, but it wasn't a huge problem because the students were engaged in the hands-on part of the project.

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How much time do you think you'll need to introduce the students to the technology tool(s) and any other materials? ❏ Will children learn how to use the tool(s) through open exploration time or through guided practice/facilitation? ❏ What parts of the hardware and/or software do you anticipate causing your students trouble? ❏ What new tech terms do you need to introduce?	The students learned how to use the technology as they needed it--google docs for the data, google drawing for the picture, google slides (they had used this before) as they shared their information. Seesaw was our groups way of sharing information and videos of the students projects.
How much time do you think you'll need to introduce the students to the concept you want them to learn? ❏ In what contexts (whole group, small group, individually) might you need to roll out specific parts of your plan?	This project was done over several class periods, always starting with a short whole group discussion before working in their small groups.
Are there any students who may need additional supports, instructions, etc.? ❏ How can you meet these children where they're at? ❏ Can the technology (hardware or software) be manipulated or adapted in any way to meet these needs?	The students needing more attention, received it both from me and their group mates. Students were expected to be active and contributing members of their group. Anyone who had trouble with this was asked to sit quietly until they were ready to join their group again. There was very few instances of behavior that needed to be addressed.
How can you use cooperative grouping/roles to manage the activities? ❏ Do I need a helper if I am working with another group of children? ❏ Do I need visual supports or a QR code that can take children to a tutorial?	The students were in working groups.
Will there be a parent engagement or parent education piece?	Parents will have access to final project through Google Slides

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How will I document my students work or how will my students? How will we reflect on our work?	The students created a Google Slide presentation documenting their work. The students used Wordle to create a class reflection. Seesaw was used to share our projects with our two partner schools. Students were able to view the work of students from our partner schools, respond to them over Seesaw by trying their activities.

Describe your play or lesson plan activity so another teacher can understand what you did:
Additional Planning notes, description of play or lesson plan, pictures, links to helpful resources: Slingshot Activity 1-7