THE EDUCATION FUND 40 YEARS

FOR EXCELLENCE IN MIAMI-DADE PUBLIC SCHOOLS

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Ideas with IMPACT

STEAM

The Magic of Shadow Puppetry

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School District Education Foundation Matching Grant Program

Exploring the Magic of

Shadow Puppetry

STEAM Lesson

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Goals and Objectives:

Shadow Puppetry Exploration is a STEAM project that also incorporates literacy. In this immersive project, students can explore the enchanting world of shadow puppetry while seamlessly integrating Science, Technology, Engineering, Arts, and Mathematics (STEAM) and Language Arts.

Ensure students understand the scientific principles behind light, appreciate the engineering aspects of puppet design, and unleash their creativity in the storytelling and artistic components of the shadow play.

Florida State Standards:

SC.2.N.1.1 Raise question about the natural world , investigate them through free exploration and systematic observation, and generate appropriate explanation based on those exploration.

SC.2.N.1.2 Compare the observations made by different groups using the same tools. (measurement/ balance/ size)

CTE-TECED.68.ENTECH.13 Demonstrate the abilities to apply the design · process.

Engineering Demonstrates an understanding of the attributes of design. .

MAFS.2.MD.1.1 Measure the length of an object by selecting and using appropriate tools such

as rulers, yardsticks, meter sticks, and measuring tapes.

VA.3h.3.1 Discuss how knowledge gain in the visual art classroom can serve as a prior

knowledge in other classrooms.

VA:Cr2.1.6a Demonstrate openness in trying new ideas, materials,

methods, and approaches in making works of art and design.

VA.2.C.2.2 identifies skillful techniques used in works by peers and others.

VA.2.H.3 Connections among the arts and other disciplines strengthen learning and the ability to transfer knowledge and skills to and from other fields.

Course Outline and Overview:

This course engages students in a dynamic STEAM (Science, Technology, Engineering, Arts, and Mathematics) project centered around the art of shadow puppetry. Through a series of hands-on activities and interdisciplinary lessons, students will explore the scientific principles of light and shadow, engineering design of puppets, artistic storytelling, and mathematical concepts related to geometry and measurement. The course aims to cultivate creativity, critical thinking, problem-solving skills, and effective communication, providing a holistic and transformative learning experience.

Learning Objectives:

- Understand the scientific principles of light and shadow.
- Apply engineering concepts to design and construct shadow puppets.
- Explore artistic techniques in storytelling and puppet creation.
- Utilize mathematical concepts in the design and performance of shadow plays.
- Develop critical thinking, problem-solving, and collaboration skills.
- Enhance communication skills through storytelling and presentation.

Lesson Plan

Week one: Introduction to Shadow Puppetry

- . **Overview of shadow puppetry and its cultural significance:**

Shadow puppetry is a fascinating art form with a rich history around the world.

1. **China:** Shadow puppetry has a long and elaborate tradition in China, dating back to the Han dynasty (206 BCE – 220 CE). Stories are often based on myths, legends, and historical events. The figures can be quite intricate and detailed, and the performances are often accompanied by music and singing.
2. **India:** India has a vibrant shadow puppetry tradition known as "Tholpavai Koothu" in South India and "Ravana Chhaya" in Orissa. The stories are frequently based on religious epics like the Ramayana and Mahabharata, and the puppets are traditionally made of leather, with vibrant colors.
3. **Indonesia:** Shadow puppet theatre, known as "Wayang Kulit" in Indonesia, is a highly popular art form. Performances are based on folktales, legends, and the Hindu epics. The shadow puppets, crafted from buffalo hide, are particularly interesting as they can have intricate designs and multiple moving parts.
4. **Turkey:** Turkey has a distinct shadow puppet tradition called "Karagöz" featuring flat leather puppets. The stories are known for their humor and satire, often poking fun at social and political issues.

- **Introduction to the basic concepts of light and shadow.**

  Introduce vocabulary relate to shadows as light, shine, outline, blocking, shape move, direction light source, transparency, translucid and opaque.

- **Final activity:**

  Creating simple shadow shapes using hands.

Week Two: Light Prediction and Shadow Study (Science):

Students predict how light moves and experiment to check if their predictions are accurate.

Study how shadows are formed, considering light sources, angles, and distances. They will use 3 different types of materials: opaque, translucent, and transparent and write the conclusion in a Shadow Study Sheet (attached at resources)

With older students could be interesting to explore an activity outside in a sunny day, where they will learn how shadows are create and how they move and change in relationship to the sun`s position.

Shadow Study Sheet: Shadows & Light

How does light travel?
Transparent: a material that allows light to transmit; objects can be clearly seen through the material
Translucent: a material that allows some light to transmit; objects cannot be seen clearly through the material
Opaque: a material that absorbs or reflects all light; objects cannot be seen through the material

Shadow Study Sheet: Shaping the Shadow

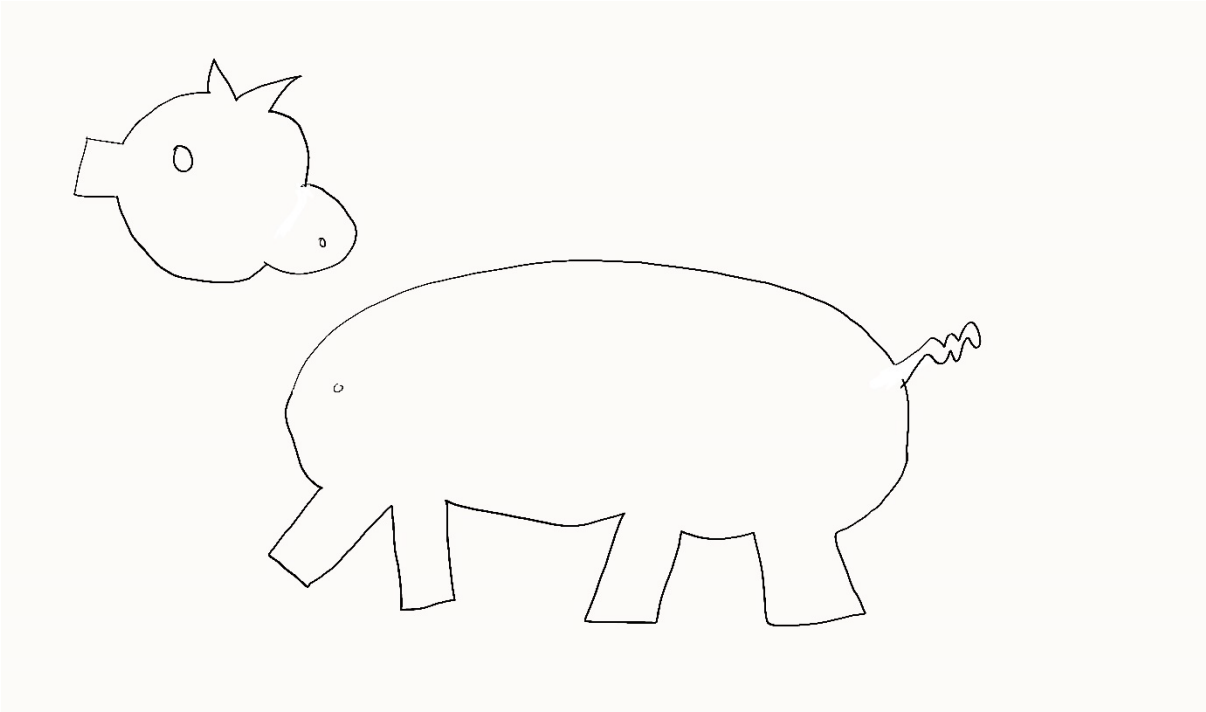
How can different shadow sizes be created?
Long Shadow: how to position the puppet to create a long shadow?
Short Shadow: how to position the puppet to create a short shadow? is it sharper ?
Blur Shadow: how to position the puppet to create a blurriest shadow possible?

Week Three: Puppet Creation (Art and Engineering):

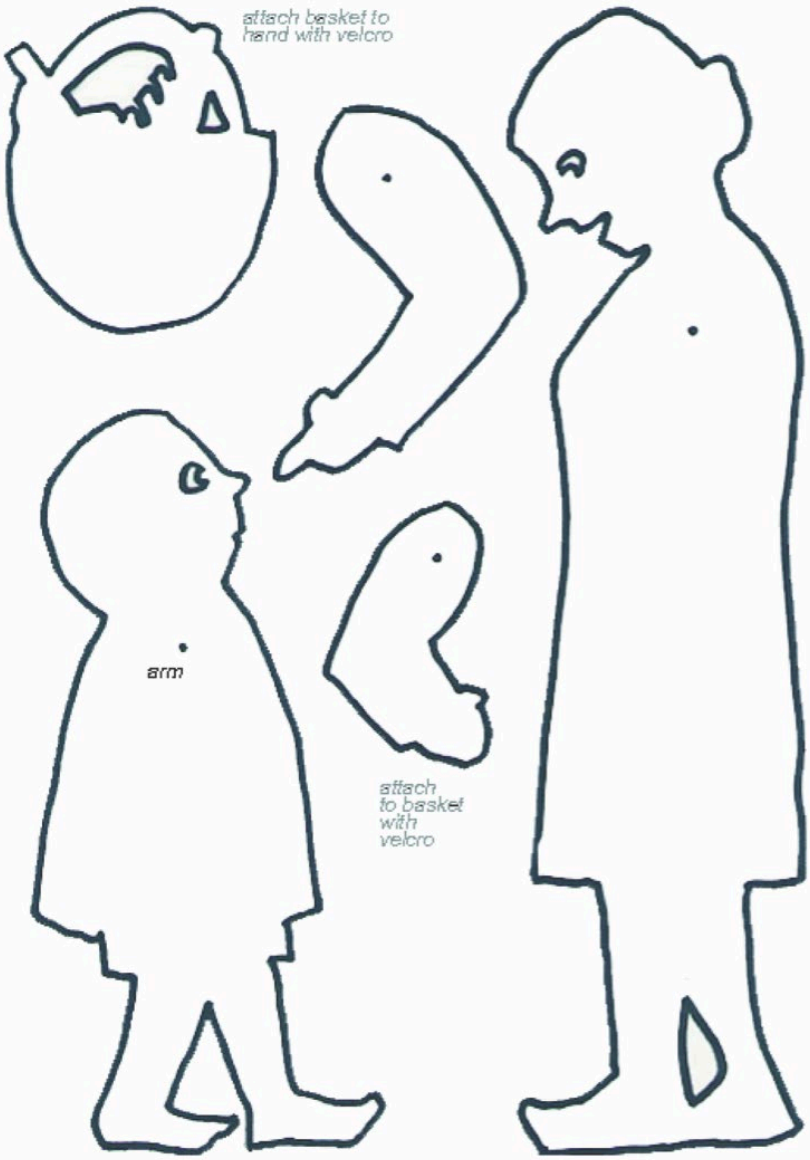
Understand terms like translucent, opaque; transparent by making shadow puppets.

Students ill use handouts of different puppets (animals and people) and they will understand how to create parts that can move.

This class is for the students to understand the mechanism to connect two parts and the necessary scale to make their own puppets later.



SHADOW PUPPETRY CUTOUTS:
LITTLE RED RIDING HOOD AND HER MOTHER



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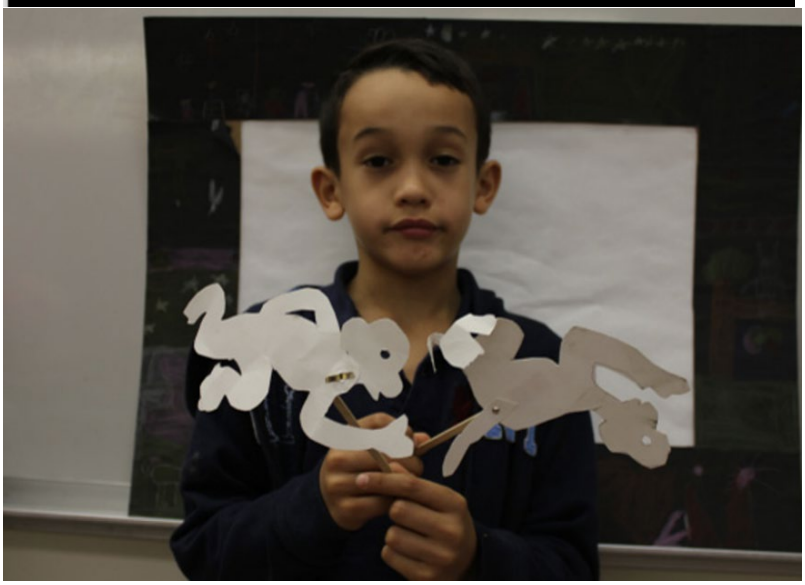
Week Four: Shadow Play Creation (Language arts and Arts):

Students choose to create an original story or adapt a fairy tale/mythological story.
Elements of storytelling: plot, characters, and setting.
Artistic techniques for creating detailed and expressive puppets.
Activity: Develop a story and design puppets and backdrops.

Week Five: Engineering Principles in Puppet Design

Basic engineering principles related to movement and structure.
Design and construct shadow puppets with movable parts.
Activity: Build simple shadow puppets using cardboard and brads.



Week Six: Stage and scenario development:

Using a big box or a cardboard to create the stage. Add the glassine paper for the screen.

Create the scenario using cellophane paper and regular paper for silhouette.

NEW LOOK

Week Seven: Performance

Rehearse and perform the shadow play in front of an audience, showcasing the integration of science, technology, engineering, arts, and mathematics in the final presentation. An alternative for younger students is to record the performance in advance and present the videos.

Resource List

Internet

Text:

https://ich.unesco.org/en/RL/chinese-shadow-puppetry-00421

https://artsandculture.google.com/story/the-traditional-art-form-of-chinese-shadow-puppetry-king-shadow-museum/yAXRvop6wTndJw?hl=en

https://archive.org/details/artofshadowgraphootrewuoft/page/n20/mode/1up

https://archive.org/details/javaneseshadowpuoooooscot/mode/2up

https://digitalcollections.oscars.org/digital/collection/p15759coll11/id/17105

Videos:

https://www.youtube.com/watch?v=aSoS1AUWLXI

https://www.youtube.com/watch?v=8-mzqxZNp2g&t=209s

https://www.youtube.com/watch?v=H3sI1IvO6Jw

https://www.youtube.com/watch?v=87_ty8dfHho

https://archive.org/details/reiniger_the_star_of_bethlehem

https://vimeo.com/157181988

Material List

1. Masking tape
2. light source
3. Colored cellophane sheets
4. Clear acetate sheets.
5. 5mm or thicker wooden dowels
6. Double sided masking tape
7. Small brads
8. Screw-punch (different sizes and shapes)
9. 180 to 240gsm paper (for scenography and silhouettes)
10. Needle and sewing thread
11. cardboard or a big box for the stage
12. Scissor
13. cutter
14. Glassine paper (screen) or another translucid material