

Light up Galaxy Painting

Grade Level: 8th

Lessons

1. Learning basic stitches.
2. Galaxy painting on fabric.
3. Sewing on Lily Pad Arduino circuit.

Central focus of the Unit/Big Ideas:

- Document and reflect on early stages of the creative process, visually and/or verbally in traditional or new media.
- Analyze how the interaction of subject matter, characteristics of form and structure, use of media, artmaking approaches, and relevant contextual information contributes to understanding messages or ideas and mood conveyed.
- Identify and explore careers in which innovation and creative problem-solving skills are fundamental to success.

New York State Learning Standards for the Arts:

Creating	Presenting	Responding	Connecting
VA:Cr1.1.8 a. VA:Cr2.1.8 a. VA:Cr2.3.8 a. VA:Cr3.1.8 a.	VA:Pr6.1.8 a.	VA:Re7.1.8 a. VA:Re8.1.8 a.	VA:Cn11.2.8 a.

Lesson # 1- Learning basic stitches.

Unit Title: Light up Galaxy Painting

Lesson Plan #	Grade	Length of each period	Number of days
1/3	8 th	90 min	1

Essential Questions:

1. What is embroidery?
2. What is a running stitch?

Lesson Objectives:

- Students will learn how to perform a running stitch.
- Students will learn how to set up embroidery hoops.
- Students will learn how to thread a needle and how to tie a knot.

Assessments:

- Pre-assessment: Students will be asked to put on the embroidery hoop by themselves.

Overview:

Day 1 : Students will learn how to assemble the embroidery hoops and learn how to do running stitch.

Materials –Artist/ Visual Text /Technology/ Resources:

Embroidery hoop 8 inch, embroidery needles, embroidery thread, muslin fabric, scissors.

Academic Vocabulary:

embroidery, stitchery, running stitch, knot, muslin fabric.

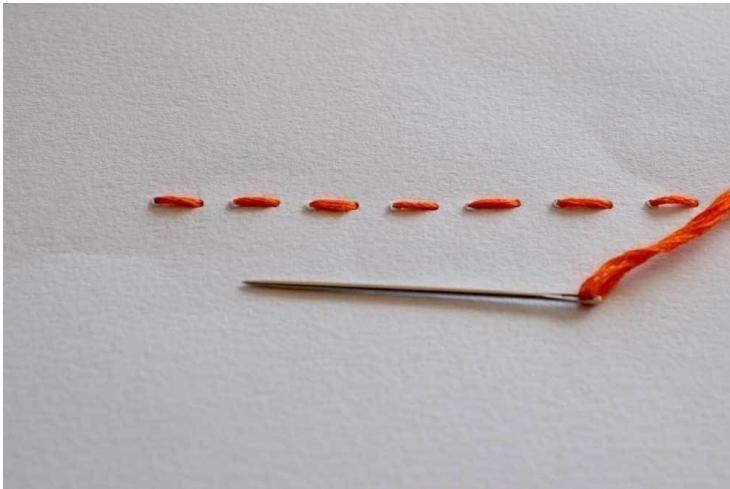
Student Support and Differentiation:

- Whole Class: The whole class will have a tiered lesson. Students that finish quickly will be encouraged to practice and investigate onward. Students that work slower have the opportunity to work on it at home or open studio time in school.
- Groups of students with similar needs: Groups of students with similar needs will be seated together so they can share and discuss their research with each other. If needed, students will receive additional instruction.
- Individual students: Students who work quickly will have the opportunity to practice different types of embroidery stitches. Students who work slower will be given the opportunity to work in open studio time in school.
- Students with IEP's or 504 plans: The lesson will be modified for students with IEP's or 504 plans on a case by case basis.

NYS Visual Arts Standards:

Creating	Presenting	Responding	Connecting
VA:Cr1.1.8 a. VA:Cr3.1.8 a.			

Art References
Lesson # 1



Teaching Procedure/Task Analysis - Day 1

Time Allotment 90 min	Task
5 minutes	A. Motivation/Spark/Launch <ul style="list-style-type: none">● Review or Transition from Previous Period Students will be introduced to embroidery. *Key Questions: <ul style="list-style-type: none">● How to set up an embroidery hoop?● How to make a knot?
5 min	B. Presentation of Lesson Objectives <ul style="list-style-type: none">● Students will be introduced to stitchery.● Students will be given materials so they can identify each material's name and its usage.
12 min	C. Modeling/Demonstration <ul style="list-style-type: none">● Students will gather around one table for the demonstration.● Students will be given a demonstration on how to set up an embroidery hoop.● Students will be given a demonstration on how to thread a needle and make a knot at the end.● Students will be given a demonstration on how to perform a running stitch.● Students will be given a demonstration on how to perform a cross-stitch.
58 min	D. Transition and Work Period (practice and application) <ul style="list-style-type: none">● Students will start by assembling the embroidery hoops with muslin fabric on.● Students will draw 2 lines and one desirable shape on the fabric.● Students will use a running stitch to go over the lines they have drawn.● Students will learn cross-stitch if they finish early.
10 min	E. Closure <ul style="list-style-type: none">● Students will write their names on the fabric they have been practicing stitches on.● Students will collect needles altogether and hand it to the instructor.

Lesson # 2 - Galaxy painting on fabric.

Unit Title: Light up Galaxy Painting

Lesson Plan #	Grade	Length of each period	Number of days
2/3	8 th	90 min	1

Essential Questions:

1. What are 4 types of galaxies?
2. How can we use blending technique with the paint to create the galaxy painting?

Lesson Objectives:

- Students will learn how to mix acrylic paints to make colors.
- Students will learn how to paint acrylic paints on a piece of fabric.
- Students will create galaxy paintings by observing various pictures of the galaxy.

Assessments:

- Formative assessment:
 - Students will fill out a worksheet (see appendix A)about the different types of galaxies.
 - Students will do a practice painting of the galaxy on paper.

Overview:

Day 1 : Students will learn 4 different types of galaxies and sketch out on the handout. Students will paint galaxies using blending technique with paint on fabrics.

Materials –Artist/ Visual Text /Technology/ Resources:

Acrylic paints, paintbrushes, water buckets, palettes, sponges, navy colored fabric, black paper.

Academic Vocabulary:

Color Mixing, blending, patterns, brush strokes, warm colors, cool colors, spiral galaxy, elliptical galaxy, irregular galaxy, milkyway

Student Support and Differentiation:

- Whole Class: The whole class will have a tiered lesson. Students that finish quickly will be encouraged to practice and investigate onward. Students that work slower have the opportunity to work on the project for the open studio time in school.
- Groups of students with similar needs: Groups of students with similar needs will be seated together so they can share and discuss their research with each other. If needed, students will receive additional instruction.
- Individual students: Students who work quickly will have the opportunity to paint different types of galaxy on black papers. Students who work slower will be given the opportunity to work in the open studio time in school.
- Students with IEP's or 504 plans: The lesson will be modified for students with IEP's or 504 plans on a case by case basis.

NYS Visual Arts Standards:

Creating	Presenting	Responding	Connecting
VA:Cr2.1.8 a. VA:Cr2.3.8 a.		VA:Re8.1.8 a	

Art References Lesson # 2



Photos of galaxy.



- https://www.youtube.com/watch?v=EFO_bsg1sw8

Teacher's Work Samples
Lesson # 2



Teaching Procedure/Task Analysis - Lesson #2_Day 1

Time Allotment 90 min	Task
5 minutes	<p>A. Motivation/Spark/Launch</p> <p>Review or Transition from Previous Period Students will be reviewed about the lesson for the day. *Key Questions: What are 4 types of galaxies?</p>
10 min	<p>B. Presentation of Lesson Objectives</p> <ul style="list-style-type: none"> ● Students will watch short videos about the types of galaxies. https://www.youtube.com/watch?v=EFO_bsg1sw8 ● Students will also see enlarged photos of different types of galaxies. ● Students will discuss and share what they have noticed about the galaxies. (colors, shapes, forms, etc.) ● Students will identify different types of galaxies by going over enlarged photos of different types of galaxies.
10 min	<p>C. Modeling/Demonstration</p> <ul style="list-style-type: none"> ● Students will gather around to see the demonstration. ● First demonstration will be how to set up the fabric. ● Demonstration on mixing desired colors will be given. 3 or 4 students will volunteer to suggest the type of galaxy and its colors for the instructor to paint. ● Students will be given demonstrations on how to use brushstrokes to create cloudy effects and blending techniques. ● Students will also learn how to make speckles with white paint to create little stars.
55 min	<p>D. Transition and Work Period (practice and application)</p> <ul style="list-style-type: none"> ● Students will collect colors they wish to use on their palettes. ● Students will trace the size of the embroidery hoop on the navy fabric with white pencil. ● Students will practice on black paper to test out brush strokes and colors. ● Students will tape the fabric onto scrap paper and start painting. ● Students will be encouraged to work on different brush stroke techniques.
10 min	<p>E. Closure</p> <ul style="list-style-type: none"> ● Students will clean up and put the finished painting on the drying rack. ● Students will discuss and share what type of galaxy they have been working on and what techniques they have used for their project.

Lesson # 3 - Sewing on Lily Pad Arduino circuit.

Unit Title: Light up Galaxy Painting

Lesson Plan #	Grade	Length of each period	Number of days
3/3	8 th	90 min	3

Essential Questions:

1. What is an electric circuit?
2. What are some things we can do with the wearable LilyPad Arduino circuits?

Lesson Objectives:

- Students will learn how to assemble electric circuits onto the fabric using the Lily Pad Arduino.
- Students will learn how to sew with a conductive thread.
- Students will arrange the Lily Pad Arduino LED lights.
- Students will incorporate the galaxy painting they have created in the last lesson to assemble with the Lily Pad Arduino circuits to create a light up galaxy painting piece.

Assessments:

- Formative assessment:
 - Students will be given a worksheet (see Appendix B) to help them visually understand how to conduct the electric circuit.
 - Students will check in with the instructor after they sketch out the circuite on to the fabric. The instructor will check the circuit sketch and glue down the LED lights where students desire to put.
- Summative assessment: Students will test the circuit by putting in the battery and turn on the switch to see if all LED lights light up.

Overview:

Day 1 : Handouts on electric circuits. Students will draw out circuits to get an idea of how to operate.

Day 2 : Students will assemble the hoops to sew on the LilyPad Arduino circuits.

Day 3 : Work day. Students will do a gallery walk and write reflections.

Materials –Artist/ Visual Text /Technology/ Resources:

Galaxy painting done from last lesson, embroidery hoops, fabric scraps, embroidery needles, LilyPad LED White (5pcs), LilyPad Coin Cell Battery Holder - Switched - 20mm, Coin Cell Battery - 20mm (CR2025), Conductive Thread, colored embroidery threads, handouts

Academic Vocabulary:

Sewable electronics, Lily Pad Arduino, positive charge, negative charge, conductive, tabs, LED lights

Student Support and Differentiation:

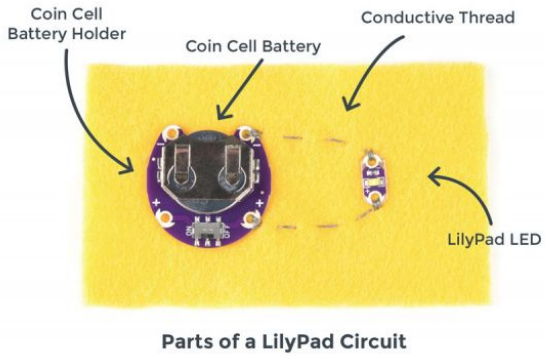
- Whole Class: The whole class will have a tiered lesson. Students that finish quickly will be encouraged to practice and investigate onward or help their peers who need help. Students that work slower have the opportunity to work on it at home or open studio time in school.
- Groups of students with similar needs: Groups of students with similar needs will be seated together so they can share and discuss their research with each other. If needed, students will receive additional instruction.
- Individual students: Students who work quickly will have the opportunity to add details on to their galaxy painted fabric with embroidery stitches. Students who work slower will be given the opportunity to work in open studio time in school.
- Students with IEP's or 504 plans: The lesson will be modified for students with IEP's or 504 plans on a case by case basis.

NYS Visual Arts Standards:

Creating	Presenting	Responding	Connecting
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Art References

Lesson # 3



Arduino Kits



Arduino Kits



Video on sewing Lily Pad Arduino kit- <https://www.youtube.com/watch?v=2HOF0zKKSG0>

Teacher's Work Samples
Lesson # 3



Teaching Procedure/Task Analysis - Lesson#3/Day 1

Time Allotment 90 min	Task
7 minutes	<p>A. Motivation/Spark/Launch Review or Transition from Previous Period Students will be given a preview of what is expected in class for the lesson.</p> <p>*Key Questions:</p> <ul style="list-style-type: none"> ● What is Sewable electronics? ● What is a Lily Pad Arduino? ● How can we connect electric circuits? ● What are the positive and negative charges in the electric circuits?
10 min	<p>B. Presentation of Lesson Objectives</p> <ul style="list-style-type: none"> ● Students will share and discuss what they know about the electric circuits and what they have learned about the Lily Pad Arduino electric circuits. ● Enlarged photos of the instructions on how to sew on the Lily Pad Arduino will be displayed on the smart board throughout the lesson.
10 min	<p>C. Modeling/Demonstration</p> <ul style="list-style-type: none"> ● Students will watch a short video on how to assemble the Lily Pad Arduino. https://www.youtube.com/watch?v=2HOF0zKKSG0 ● Hands on demonstration will be also given after watching the video. ● Students will be given demonstrations on how to set up the final piece half way through the class time.
58 min	<p>D. Transition and Work Period (practice and application)</p> <ul style="list-style-type: none"> ● Students will start sketching out the guided circuit lines to assemble their Lily Pad Arduino electric circuits on the muslin fabric. ● Students will mark where to put 5 LED lights and bring it to the instructor to hot glue gun the lights on to the desirable spots. ● Students will discuss one on one with the instructor and start stitching the lines with the conductive thread. ● Students will test out the lights.
5 min	<p>E. Closure</p> <ul style="list-style-type: none"> ● Students will clean up. ● Students will share and discuss what they have learned and what were the challenges of this project.

Teaching Procedure/Task Analysis - Lesson#3/Day 2

Time Allotment 90 min	Task
5 minutes	<p>A. Motivation/Spark/Launch Review or Transition from Previous Period Students will finish up stitching extra details if they wish.</p> <p>*Key Questions: What are some possibilities for the future projects using Lily Pad Arduino electric circuit?</p>
10 min	<p>B. Presentation of Lesson Objectives</p> <ul style="list-style-type: none"> ● Students will be presented a sample work of the instructor. ● Students will discuss and share any details they can work on for the final project. ● Students will be given options to add detailed embroidery stitches using cross-stitch or running stitch they have learned in lesson 1.
10 min	<p>C. Modeling/Demonstration</p> <ul style="list-style-type: none"> ● Students will gather around for the demonstration. ● Students will visually see how to prepare the embroidery hoop by wrapping scrap fabric strips around it. ● Students will be given demonstrations on how to assemble finished circuit fabric pieces and the galaxy painting fabric piece together.
50 min	<p>D. Transition and Work Period (practice and application)</p> <ul style="list-style-type: none"> ● Students will be working on either the circuit if they have not finished, or add details on to the galaxy painting fabric using embroidery threads. ● Students will assemble the final project. ● Students will write a reflection (see Appendix C) when done. ● Students will get ready for the gallery walk.
15 min	<p>E. Closure Students will clean up.</p> <p>** Closing Question: What are some challenges working with LilyPad Arduino circuits?</p>

Teaching Procedure/Task Analysis - Lesson#3/Day 2

Time Allotment 90 min	Task
70 min	<p>A. Transition and Work Period (practice and application)</p> <ul style="list-style-type: none">• Students will be working on either the circuit if they have not finished, or add details on to the galaxy painting fabric using embroidery threads.• Students will assemble the final project.• Students will write a reflection (see Appendix C) when done.
20 min	<p>B. Closure</p> <p>Students will clean up and do a gallery walk.</p> <p>** Closing Question: What are some ideas for the future usage of Lilypad Arduino circuits?</p>