



Arts Integration in Science

Competency

Educator integrates an art form (or forms) into science instruction to increase student learning and engagement.

Key Method

The educator designs an inclusive and culturally responsive learning experience for students that integrates art forms to make natural connections to science instruction.

Method Components

Arts Integration versus Arts Enhancement

“(Art) enhancement is where the arts are simply supporting the content area but are not being assessed. (Art) integration is where both the art and the content area have objectives and both are being assessed.” —EducationCloset

According to the Kennedy Center for the Performing Arts, arts integration is defined as an “approach to teaching in which students construct and demonstrate understanding through an art form. Students engage in a creative process which connects an art form and another subject area and meets evolving objectives in both.”

<http://www.kennedy-center.org/education/partners/Adefinitionhandout.pdf>

Guiding Principles

“While all types of arts-based instruction are encouraged, it is helpful for teachers to know if they are engaged in arts integration. To clarify its distinctive nature, an Arts Integration Checklist is provided. Teachers answering yes to the items can be



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assured that their approach to teaching is indeed integrated.” —Lynne B. Silverstein and Sean Layne

http://www.kennedy-center.org/education/partners/defining_arts_integration.pdf

- Refer to page 9 of the above Kennedy Center linked document for the checklist.

Key Elements of an Arts-Integrated Science Lesson

Following are defining characteristics of an arts-integrated science lesson:

- It includes at least one part of the scientific method: observe, ask a question, form a hypothesis, conduct an experiment, accept hypothesis.
- It includes one of the science process skills: classifying, observing, measuring, inferring, predicting, communicating.
- It contains elements of constructivism in art.
- Students use their understanding of an art form to make connections to content.
- Students construct and demonstrate understanding through an art form.
- Students create original artwork.
- Students revise original artwork.
- The artwork created reinforces the content being taught.
- The artwork and content connect to one another.
- Objectives exist for both the art form and the content.
- At least one content standard is addressed.

Components of Culturally Responsive Teaching

- Educators acknowledge and incorporate students' cultural heritages within instruction.
- Educators recognize the benefits of culturally responsive education in improving students' academic achievement.
- Local environment, community, students, and families are recognized as resources when creating art and learning opportunities, cultivating a place-based learning environment. Students are encouraged to take active roles in their learning.

Practices of Culturally Responsive Instruction

- Educator reflects on personal attitudes and belief systems as they relate to different cultures.
- Educator utilizes different levels of culture to integrate and enhance classroom art instruction and integration.
- Different levels of culture include:
 - Surface—observable (i.e., music, food, dress,)
 - Shallow—social interactions
 - Deep—morals, spirituality, health
- Educator supports students in taking greater ownership for their learning.
- Educator provides authentic learning opportunities.



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Supporting Rationale and Research

Andrade, H., et al. (2014). Formative assessment in the visual arts. *Art Education*, 67(1). Retrieved from

https://drive.google.com/file/d/1ZysFTbK_kN7bkWx5vNrDU6kI3PyJel9J/view?usp=sharing

The article discusses the Artful Learning Communities project, which aimed to help elementary and middle school arts teachers to assess learning in the arts, promote student art achievements through assessment, and develop the ability of teachers to systematize their assessment through the use of feedback. The project was supported by the U.S. Department of Education, and 48,000 students in grades 3–8 from schools in South Brooklyn, New York City, took part. The authors suggest that when students had the chance to become their own educators, they were able to show attributes desirable in learners, such as self-teaching and self-assessment.

Ballengee-Morris, C., & Stuhr, P. L. (2015). Multicultural art and visual cultural education in a changing world. *Art Education*, 54(4), 6-13. Retrieved from

<https://www.tandfonline.com/doi/pdf/10.1080/00043125.2001.11653451?needAccess=true>

(use alternate access options and a free account to read)

Chappell, S. V., & Cahnmann-Taylor, M. (2013). No child left with crayons: The imperative of arts-based education and research with language “minority” and other minoritized communities. *Review of Research in Education*, 37(1), 243-268. Retrieved from

<https://www.edpolicyinca.org/newsroom/no-child-left-crayons-imperative-arts-based-education-and-research-language-minority-and>

Graham, N., & Brouillette, L. (2016). Using arts integration to make science learning memorable in the upper elementary grades: A quasi-experimental study. *Journal for Learning Through the Arts*, 12(1). Retrieved from

<https://drive.google.com/file/d/110IEOC5lq3JIHdUDSkr9Jc1K7w0zFmGO/view?usp=sharing>

Latham, K. (2017). Integrating art into the classroom: a necessary component of a well-rounded education. Honors College Capstone Experience/Thesis Projects, paper 717. Retrieved from



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https://drive.google.com/file/d/12cCFRb3RO5UBpNxJL_ofoMNF-mXOnG3i/view?usp=sharing

Pitts, S. E. (2016). Music, language and learning: Investigating the impact of a music workshop project in four English early years settings. *International Journal of Education & the Arts*, 17(20). Retrieved from <http://www.artsedsearch.org/study/music-language-and-learning-investigating-the-impact-of-a-music-workshop-project-in-four-english-early-years-settings/>

Resources

Articles

[Defining Arts Integration](#)

[Art for Art's Sake?](#)

[More Schools Are Working to Integrate the Arts into Classroom Learning](#)

[How Integrating Arts into Other Subject Areas Makes Learning Come Alive](#)

[5 Ways to Integrate Expressive Arts Activities into the Middle and High School Classroom](#)

[Using the Arts to Turn Schools Around](#)

[Using Expressive Writing to Keep Students Grounded and Engaged in Science Courses](#)

[Formative Assessment in Arts Education](#)

[Art Integration: Easy Ideas Combining Science and Art](#)

[Discovering Science Through Art-Based Activities](#)

[8 Art Projects that Incorporate Science](#)

[Arts Integration: Resource Roundup](#)



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[15 Ways Art Can Increase Innovation in Your Science Class](#)

Videos

[Eric Berridge: Why Tech Needs the Humanities](#)

[Liz Coleman: A Call to Reinvent Liberal Arts Education](#)

[Mae Jemison: Teaching Arts and Sciences Together](#)

[Ken Robinson: Do Schools Kill Creativity?](#)

[Ken Robinson: Changing Education Paradigms](#)

[Edutopia: Arts Integration for Deeper Learning in Middle School](#)

Teaching Resources

[The Kennedy Center—ArtsEdge](#)

[EducationCloset](#)

[A Guide for Assessing Classroom Practice of Arts Integration](#)

[Lesson Plans from Crayola](#)

[Integrating Arts Learning with the Common Core State Standards](#)

[Structuring Summative & Formative Assessment in Visual Art](#)

[Project Zero \(Harvard Graduate School of Education\)](#)

Digital Narrative Examples

[5 Digital Storytelling Assignments in the Classroom](#)

[7 of the Best Examples of Digital Storytelling](#)



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Submission Guidelines & Evaluation Criteria

To earn the micro-credential, you must receive a passing score in Parts 1 and 3, and receive a proficient rating for all components in Part 2.

Part 1. Overview Questions (Provides Context)

(175-250 words)

Please answer the following contextual questions to help our assessor understand your current situation. *Please do not include any information that will identify you to your reviewers.*

1. Describe the integrated art form and the science standard being taught.
2. Describe how the integrated art form will be culturally responsive to engage learners.
3. Explain your learning goal for this arts integration science lesson.

Passing: Response provides reasonable and accurate information that justifies the reason for choosing this micro-credential to address specific needs of both the teacher and the students. Educator includes a learning goal that describes what they hope to gain from earning this micro-credential.

Part 2. Work Examples/Artifacts/Evidence

To earn this micro-credential, please submit the following artifacts as evidence of your learning. *Please do not include any information that will identify you or your students to your reviewers.*

Artifact 1: Arts Integration Science Lesson Plan

Include:

- Grade level
- Time needed
- At least one science standard
- At least one art standard
- Learning objectives/outcomes
- The key elements listed in the Method Components of this micro-credential
- Lessons that allow students opportunities to make connections between the art and science standards
- Art forms that are integrated in a natural way
- Lesson includes opportunity for students to make connections with their own or another culture



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Artifact 2: Documentation of Process

Select one of the following to document the **process** of creating and implementing lessons using art forms that show deep understanding for both the teacher and the learner. (Take care to protect student identity.)

- Upload a two- to four-minute video showing a student(s) engaged in artistic expression connecting art to science content. At the beginning of and throughout the video, narrate or display information to explain the learning intended for BOTH the culturally relevant art form and the science standard, as well as the connection to the science content area. (Follow your district's policy concerning video with students.) **Video Tips:** Time stamp specific evidences in your video; video children from the neck down, with instruments blocking faces and/or from the back of head.
- Share in a photo essay, of at least 10 and no more than 20 slides, student work samples that indicate a deep knowledge of content expressed through a culturally relevant art form. Include text or captions on each slide to guide the assessor. (Follow your district's policy concerning video with students.)

Artifact 3: Written Analysis

Connect your choice in the second option (video or photo essay) to a **written analysis** (450-600 words) that includes the following information:

- The rationale used to inform your instructional practice based on the integration of an art form with science content
- How this lesson supports elements of constructivism
- How this lesson shows how students made connections between the art form and the science content
- How students constructed and demonstrated understanding through an art form
- How students created original artwork
- How students revised original artwork
- How the artwork created reinforces the science content being taught
- How the artwork and content connect to one another
- How the objectives for both the art form and the science content were met
- How the science content standard was met through the art form
- How students created connections with their own or another culture



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Part 2. Rubric

	Proficient	Basic	Developing
Artifact 1: Lesson Plan	<p>Plan includes grade level.</p> <p>Plan includes time needed.</p> <p>Plan includes at least one science standard.</p> <p>Plan includes at least one art standard.</p> <p>Plan includes learning objectives/outcomes.</p> <p>Plan includes key elements of an arts-integrated lesson:</p> <p>Elements of constructivism</p> <p>Students use their understanding of an art form to make connections to content</p> <p>Students construct and demonstrate understanding through an art form</p>	<p>Plan includes grade level.</p> <p>Plan includes time needed.</p> <p>Plan includes at least one science standard.</p> <p>Plan includes at least one art standard.</p> <p>Plan includes learning objectives/outcomes.</p> <p>Content of lessons has vague connections or is not grade-level appropriate.</p> <p>Plan includes <u>6 to 8</u> of the key elements of an arts-integrated lesson:</p> <p>Elements of constructivism</p> <p>Students use their understanding of an art form to make</p>	<p>Plan is missing 1 or more of the following:</p> <p>Grade level</p> <p>Time needed</p> <p>At least one science standard</p> <p>At least one art standard</p> <p>Learning objectives/outcomes</p> <p><i>and/or</i></p> <p>Plan includes <u>fewer than 6</u> of the key elements of an arts-integrated lesson:</p> <p>Elements of constructivism</p> <p>Students use their understanding of an art form to make connections to content</p>



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	<p>Students create original artwork</p> <p>Students revise original artwork</p> <p>The artwork created reinforces the content being taught</p> <p>The artwork and content connect to one another</p> <p>Objectives exist for both the art form and the content</p> <p>At least one science content standard is addressed</p> <p>Lessons allow students opportunities to make connections between the art and science standards.</p> <p>Art forms are integrated in a natural way.</p> <p>Plan includes opportunity for students to make a connection to their own or others' culture</p>	<p>connections to content</p> <p>Students construct and demonstrate understanding through an art form</p> <p>Students create original artwork</p> <p>Students revise original artwork</p> <p>The artwork created reinforces the content being taught</p> <p>The artwork and content connect to one another</p> <p>Objectives exist for both the art form and the content</p> <p>At least one science content standard is addressed</p> <p>Lessons allow students opportunities to make connections between the art and science standards.</p> <p>Art forms are integrated in a natural way.</p>	<p>Students construct and demonstrate understanding through an art form</p> <p>Students create original artwork</p> <p>Students revise original artwork</p> <p>The artwork created reinforces the content being taught</p> <p>The artwork and content connect to one another</p> <p>Objectives exist for both the art form and the content</p> <p>At least one science content standard is addressed</p> <p><i>and/or</i></p> <p>Lesson may or may not allow students opportunities to make connections between the art and science standards.</p> <p><i>and/or</i></p> <p>Art component(s) may or may not be forced and not naturally tied to lesson plan.</p>
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<p>Artifact 2: Process Documentation, Video Option</p>	<p>Video includes <u>all</u> points below:</p> <p>Shows how you know students have gained a deep knowledge of science content expressed through a culturally relevant art form.</p> <p>Information in video provides examples of the relationship between the science content, cultural competence, and the art form.</p> <p>At the beginning and throughout the video, narration or display of information explains the learning intended for BOTH the art form and the science standard.</p> <p>At the beginning and throughout the video, narration or display of information explains the connection between the art form, cultural competence, and the science content area.</p>	<p>Video includes <u>3 of the 4</u> points below:</p> <p>Shows how you know students have gained a deep knowledge of science content expressed through an art form.</p> <p>Information in video provides examples of the relationship between the science content and the art form.</p> <p>At the beginning and throughout the video, narration or display of information explains the learning intended for BOTH the art form and the science standard.</p> <p>At the beginning and throughout the video, narration or display of information explains the connection between the art form and the science content area.</p>	<p>Video includes <u>fewer than 3</u> of the points below:</p> <p>Shows how you know students have gained a deep knowledge of science content expressed through an art form.</p> <p>Information in video provides examples of the relationship between the science content and the art form.</p> <p>At the beginning and throughout the video, narration or display of information explains the learning intended for BOTH the art form and the science standard.</p> <p>At the beginning and throughout the video, narration or display of information explains the connection between the art form and the science content area.</p>
<p>Artifact 2: Process Documentation</p>	<p>Photos document your process creating and</p>	<p>Process is documented but incomplete and</p>	<p>Process is not evident.</p>



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<p>on, Photo Essay Option</p>	<p>implementing your arts-integrated science lesson.</p> <p>Art forms documented show deep understanding of the connection between the science content, culture, and the art form for both the teacher and the learner.</p> <p>At least 10 and no more than 20 photos are included.</p> <p>All photos are captioned with complete sentences.</p>	<p>missing some components.</p> <p>Photo essay does not contain the correct number of photographs.</p> <p>Captions do not sufficiently demonstrate the process.</p> <p>Some or all captions are missing.</p>	<p>Photo essay does not contain the correct number of photographs, or photos and/or captions are omitted.</p> <p>Photos are not related to the lesson.</p>
<p>Artifact 3 Written Analysis</p>	<p>Analysis contains <u>all</u> the following points:</p> <p>What was the rationale used to inform your instructional practice based on the integration of an art form with science content</p> <p>In what ways does this lesson support elements of constructivism</p> <p>How this lesson shows students made connections between the art form and the science content</p>	<p>Analysis contains <u>7 to 9</u> of the following points:</p> <p>What was the rationale used to inform your instructional practice based on the integration of an art form with science content</p> <p>In what ways does this lesson support elements of constructivism</p> <p>How this lesson shows students made connections between the art</p>	<p>Analysis contains <u>fewer than 7</u> of the following points:</p> <p>What was the rationale used to inform your instructional practice based on the integration of an art form with science content</p> <p>In what ways does this lesson support elements of constructivism</p> <p>How this lesson shows students made connections between the art</p>



	<p>How students constructed and demonstrated understanding through an art form</p> <p>How students created original artwork</p> <p>How students revised original artwork</p> <p>How the artwork created reinforces the science content being taught</p> <p>How the artwork and content connect to one another</p> <p>How the objectives for both the art form and the science content were met</p> <p>How the science content standard was met through the art form</p> <p>How this lesson supports cultural competence</p> <p>Grammar, spelling, and sentence structure <u>enhance</u> clear communication.</p>	<p>form and the science content</p> <p>How students constructed and demonstrated understanding through an art form</p> <p>How students created original artwork</p> <p>How students revised original artwork</p> <p>How the artwork created reinforces the science content being taught</p> <p>How the artwork and content connect to one another</p> <p>How the objectives for both the art form and the science content were met</p> <p>How the science content standard was met through the art form</p> <p>Grammar, spelling, and sentence structure <u>allow</u> for clear communication.</p>	<p>form and the science content</p> <p>How students constructed and demonstrated understanding through an art form</p> <p>How students created original artwork</p> <p>How students revised original artwork</p> <p>How the artwork created reinforces the science content being taught</p> <p>How the artwork and content connect to one another</p> <p>How the objectives for both the art form and the science content were met</p> <p>How the science content standard was met through the art form</p> <p>Grammar, spelling, and sentence structure <u>may inhibit</u> clear communication.</p>
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Part 3. Reflection

(400-500 words)

Use the word count as a guide to write a personal reflection about your work on this micro-credential. For tips on writing a good reflection review the following resource:

[How Do I Write a Good Personal Reflection?](#)

Please answer the following reflective questions. *Please do not include any information that will identify you to your reviewers.*

1. How will arts integration influence your science teaching practices within your school demographics?
2. How is your arts-integrated science lesson student-centered and celebratory of culturally responsive learning?
3. How will earning this micro-credential in arts integration influence your future science lesson planning?

Passing: Reflection provides evidence that this activity has had a positive impact on both educator practice and student success. Specific examples are cited directly from personal or work-related experiences to support claims. Also included are specific actionable steps that demonstrate how new learning will be integrated into future practices.



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