BAM: STEAM
Teacher Resource Guide

What is STEAM

STEAM Education is an approach to learning that uses Science, Technology, Engineering, the Arts and Mathematics as access points for guiding student inquiry, dialogue, and critical thinking.

Integrating STEAM in Education

For too long, education has focused solely on preparing students for traditional jobs, overlooking the dynamic and ever-changing nature of the modern workforce. The STEM to STEAM movement emphasizes the integration of arts (A) into the fields of science, technology, engineering, and math (STEM), providing a more comprehensive approach to education that fosters creativity, innovation, and critical thinking.

Why STEAM?
- STEM alone misses crucial components essential for thriving in the 21st-century economy.
- STEAM integrates arts practices, design principles, and standards to provide a holistic learning experience.
- It fosters wonder, critique, inquiry, and innovation, essential for addressing real-world challenges.

Creating a STEAM-Centered Classroom:
1. Focus: Select an essential question or problem that relates to both STEM and arts content areas.
2. Detail: Identify contributing elements to the problem or question, uncovering key background information and skills.
3. Discovery: Facilitate active research and intentional teaching, analyzing current solutions and addressing skill gaps.
4. Application: Encourage students to create their own solutions or compositions based on learned skills and knowledge.
5. Presentation: Provide opportunities for students to share their work, receive feedback, and express their perspectives.
6. Link: Guide students in reflecting on feedback and their own process, encouraging revisions for improvement.

Connecting STEAM and Literacy:
- STEAM is rooted in inquiry, critical thinking, and process-based learning, integrating humanities seamlessly.
- Literacy is inherent in every content area and is naturally embedded in STEAM practices.
- Intentional selection of aligned standards within STEM and arts is crucial for effective integration.

Examples of Integrating Literacy and STEAM:

- Visual Thinking:
  - Utilize visual thinking strategies to analyze art, music, or text across all content areas.
  - Encourage asking questions and listening to student responses, aligning with STEAM principles.

Integrating STEAM in education provides a comprehensive approach that prepares students for the complexities of the modern world. By fostering creativity, critical thinking, and innovation, STEAM education empowers students to tackle real-world challenges with confidence and ingenuity.

Classroom Explorations in STEAM Careers

Exploring STEAM careers in the classroom provides students with valuable insights into the diverse opportunities available in the modern workforce. By engaging in hands-on activities and research projects, students can discover their interests, develop essential skills, and prepare for future career paths. Here are some ideas to get students excited about STEAM careers:

- Classroom Jobs:
  - Translate STEAM career fields into actual classroom jobs for group projects throughout the year.
    - Assign roles such as graphic designer, product designer, conservator, etc., aligning with students' interests and project requirements.
  - Provide flexibility in job assignments and rotation options to accommodate various projects and student preferences.
  - Enhance engagement by creating job cards for each position, allowing students to randomly select roles for each project.

- Research and Presentation:
  - Turn career exploration into a dedicated project.
  - Have students randomly select a STEAM career and research its components, including job responsibilities, examples of companies or professionals, and typical tasks or products.
  - Encourage students to present their findings through group presentations, career days, or digital platforms like Buncee, Sway, or Flipgrid.

- Partnerships:
  - Extend career exploration by forming partnerships with professionals in the community.
  - Based on student research, invite professionals to participate in STEAM career days at the school or host Zoom calls with experts from larger corporations.
  - Utilize professional learning networks, such as Twitter chats or social media groups, to connect with individuals in STEAM fields.
  - Provide students with opportunities to hear firsthand experiences and insights from professionals actively working in STEAM careers.

As educators, it's crucial to open students' eyes to the vast array of opportunities available in STEAM fields. By integrating hands-on activities, research projects, and partnerships with professionals, we can inspire students to explore their interests, develop essential skills, and prepare for the ever-evolving landscape of the future workforce. STEAM education equips students with the creativity, critical thinking, and connective skills needed to thrive in any career path they choose to pursue.

Here is a link to free lessons for grades K-12 plans to integrate aspects of STEAM into your classroom: https://artsintegration.com/arts-integration-lessons/

Get inspiration for STEAM activities Here:

30 Fun Science Experiments You Can Do At Home

https://www.sciencebuddies.org/stem-activities

https://www.rasmussen.edu/degrees/education/blog/simple-stem-activities-for-kids/

https://thestemlaboratory.com/stem-activities-for-kids/

https://www.kodable.com/learn/interactive-stem-activities-for-elementary-students

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CLEARWATER MARINE AQUARIUM

"We believe in preserving our environment while inspiring the human spirit through leadership in the rescue, rehabilitation, and release of marine life; environmental education; research; and conservation."

- Check out some games and quizzes that Clearwater Marine Aquarium has to offer:
  https://www.cmaquarium.org/learn/kids-zone/games/

- Take a look at some of the animals Clearwater Marine Aquarium has rescued and learn some fascinating facts about them: https://www.cmaquarium.org/animals/

- Want to watch some videos featuring some of the aquatic life Clearwater Marine Aquarium has to offer? Use this link to check them out:
  https://www.cmaquarium.org/learn/kids-zone/video-gallery/

- Clearwater Marine Aquarium has created 5 at home (or in class) experiments for students:
  https://www.cmaquarium.org/app/uploads/2018/02/MSF-At-Home-Scientist-2018.pdf

- *How to Save the Dolphins*
  - #1 Volunteer for a Beach Cleanup
    - Trash on beaches and in waterways is a big issue. Luckily, there are tons of people that get together all the time to pick up trash and keep our beaches beautiful! Ask your parents if you can spend a day at the beach picking up trash to help keep our oceans healthy.
  - #2 Reduce, Reuse, Recycle
    - You probably hear this one in school all the time! Plastic waste makes up 50-80% of marine debris, so take little steps like making sure your family takes their reusable bags to the grocery store or remembering to bring a refillable water bottle with you!
  - #3 Respect Marine Life
    - If you visit the beach or anywhere that you may come into contact with marine life or a nesting site, it's important to treat them with respect! Look all you want, but it's important to never touch, harass, or feed them. Let the wildlife stay wild!

Class Acts: Mahaffey Theater
BAM! STEAM FEST

Bill Edwards
FOUNDATION FOR THE ARTS

30 Years
Class Acts

Your Class can help give back to the planet with Clearwater Marine Aquarium Trash To Toys competition! More information on the Flyer below

Here is a list of some of the top STEAM Apps and Websites for students :

APP	DESCRIPTION	ES	MS	HS
Amaziograph	How can you pack so much STEAM into one little app? Explore tessellations and symmetry by creating kaleidoscopes and mirrors using the graph and art brushes in the app.	●	●	●
Heads Up!	This is a hugely popular game of digital flashcards and charades all rolled into one. Create your own category, so you can upload your own facts and lesson details.		●	●
Shadow Puppet	Easily create videos in the classroom with this free app by SeeSaw. Students as young as five can make videos to tell stories, explain ideas, or document their learning.	●		
Adobe Capture	The app lets users take a photo of something and then trace the outline. A student can then erase parts, color it in, or enhance areas, all based on the initial sketch provided by the photo.		●	●
Bloxels	Gaming is definitely "in" and this app makes it super easy for students to design their own. Students can use design-thinking to create their own characters, layouts and stories and then transform them into their own unique game.	●	●	
Remind	This app will help you keep parents (or even students) up-to-date on what's happening in your classroom. You can use this to send quick, simple messages to any device for free!	●	●	●
SoundPrism	This app lets your students build musical loops graphically. It's a great tool for instantly integrating math, music and visual art and can be as complex or simple as you make it!		●	●
Visual Poetry	Who doesn't love when poetry meets art? This app makes it easy for you and your students to create both in a single spot.	●	●	●
Assembly	They call this an app that makes "graphic design for everyone". I have to say, it's super easy to use and has so many applications that could connect arts and other content areas. I'm having a lot of fun playing with this app this week!		●	●
MadPad	Make music out of anything! Turn everyday items and sounds into percussion instruments. It's like Blue Man group in an app.		●	●
DIY App - Creative Community for Kids	Do you ever have early finishers? If so, this app is a great way to keep them thinking and learning new skills. Specifically geared for students, it's a safe online community where kids can learn almost any creative skill or project they are interested in.	●	●	
Color Vacuum	This unique, interactive and educational app by Curious Hat encourages children to explore, experience and experiment with the world of color in their immediate environment.	●	●	
Artisto	This is kind of like the Prisma app, but for videos. You can upload any video and change it into a work of art so that it's an action-packed moving artwork. Lots of different ways to experiment with video production, story telling and art using this free app.	●	●	●
Classroom Ideas to Go!	There are over 1200 ideas for any grade, content area (yes - the arts are included) and category in this app. Literally spin the wheel of each section and find an idea you can steal for your classroom the very next day.	●	●	●
Blenduko	Talk about addicting! This app is like Tetris for colors. Students love it and it's a fantastic way to discover the science behind color theory.	●	●	●
Dragon Dictation	As part of our Special Populations and the Arts series, we found this free dictation app for students that can be used in a variety of ways. Have students dictate their work, share artists' statements, record voice-overs for movie projects and so much more	●	●	●
Lark, by Storybird	This cool free app allows you to create poetry based on works of art that you either find or upload. You can even share it as a message with the messenger app on your phone.	●		
Brainsparker	Sometimes, getting out of a creative rut is just about asking the right questions. This free app provides over 200 creative prompts to help you and your students think about problems and creative opportunities in a new way.	●	●	●
Roy G Biv	Turn your colors into sound! The app reacts to light and colors in the environment of the image and translates them in an aesthetic way in tones, sounds, and geometrical patterns.		●	●
IDEO Method Card	Want to use legendary IDEO methods right from your phone? Now you can. Use it as a way to promote critical and creative thinking routines at any point in your lessons.		●	●

SITE	DESCRIPTION	ES	MS	HS
Midnight Music	If you haven't checked out this site yet, you really need to take some time and explore. Founder Katie Wardrobe shares so many resources, ideas and lessons for integrating music and technology on this site.	●	●	●
Kiddovate	Kiddovate is a great source for creative thinking prompts! Be sure to download their free app, but then swing over to their blog where they have lots of ideas and activities that they post for free as well.	●	●	
Genius Hour Innovation Class	If you'd like to implement a Genius Hour in your classroom this year, you've GOT to check out this site. It's a free course/resource with everything you could possibly need to get started or to take your efforts to the next level.	●	●	●
The Creative Classroom	We also showcased John Spencer's book *Launch*. We're bringing you his website because it's just. that. good. Be sure to check out his "Sketchy Videos" area. Powerful learning comes in small video packages!	●	●	●
99U Video Library	Featuring experts like Brene Brown, Chris Anderson, and Clive Wilkinson and focus on everything from design, busting through blocks, and how to fail forward. Inspirational and educational. Bonus: some of these could be a great video to show at the beginning-of-the-year PD days!		●	●
BoomWriter	Looking for a way for students to collaborate on story creation, ideas, and even projects? This is a great free web-based tool to explore.	●		
LucidPress	Need to create newsletters, updates or syllabi for your classes and want them to look their best? Try LucidPress - this is super easy to use and they offer a free educator upgrade. So you can use it for your classroom and your students can use it to design their next project.		●	●
Project Noah	Project Noah was created to provide people of all ages with a simple, easy-to-use way to share their experiences with wildlife.	●	●	●
FlipQuiz	If you love to add some gaming to your classroom, or want to use game-style templates for review and assessment, this is a great free website to use. You can use the pre-made boards they have or create your own.	●	●	●
MySimpleShow	If you are considering trying some more flipped classroom lessons (having students view the lesson prior to class so you can get hands-on right from the get-go), this is a great tool to consider.	●	●	
ChromeExperiments	This is an arts integration and STEAM lovers dream. The front page isn't all that exciting, but if you click on the "Themes" tab at the top, you can sort by design, music, fractals, 3D, Virtual Reality and more.		●	●
Agency by Design	This is a web resource for teachers interested in maker education. The group shares "the promises, practices, and pedagogies of maker-centered learning" on their blog and practical ways to use thinking routines in the maker classroom.		●	●
TES Lessons from Blendspace	This website allows you to browse crowd-sourced lessons from other teachers in all kinds of content areas. You can curate your own lesson/unit board with both your own lesson plans and lesson resources from others.	●	●	●
Soundation	This is a free online recording studio that you can use anywhere. Students can collaborate on a piece of music and not even be in the same room. Compose, record and produce in one spot.		●	●
SF MoMA Teacher Resources	This section of the San Francisco MoMA site for teachers is a goldmine! There are articles you can select and read with students, video interviews, project ideas and an entire section dedicated to STEAM.	●	●	●
Presently Gifted	This site offers so many rich ideas and methods for engaging gifted and talented students. And, most of the strategies can be adapted for use in arts classes as well.	●	●	
Academic Earth	This is an open educational resources site - meaning what you find here is free to use. This is centered more for secondary classrooms, but the courses/playlists and journals are great professional resources.		●	●
Cult of Pedagogy	If you're looking for a great weekly read from the teacher's perspective, this blog is a must. We especially loved the Pineapple Charts for PD idea that Jennifer Gonzales shared!	●	●	●
curious.com	This one is JUST for you. Learn about almost anything you want, personalized to your strengths, challenges and interests.	●	●	●
The MET's Culinary Art Tours	This site provides a fantastic idea for how you can weave together aquaponics, culinary arts, science and visual art. Use it as inspiration for your own efforts!		●	●

Media Resource

[STEAM Song | Song for Kids | STEAM](#)

[Science Song | Song for Kids | STEAM](#)

[Technology Song | Song for Kids | STEAM](#)

[Engineering Song | Song for Kids | STEAM](#)

[Art Song | Song for Kids | STEAM](#)

[Math Song | Song for Kids | STEAM](#)

[What is STEAM Education? A STEAMspired approach to STEAM!](#)

[S.T.E.A.M Song | What's Up?! with Watts & Y2k | Kids Song | The Cubby Space](#)

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