

A comprehensive review and
analysis of accessibility and
effectiveness of play-based STEAM
programs for girls in the
COVID-19 setting

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Girls in STEAM

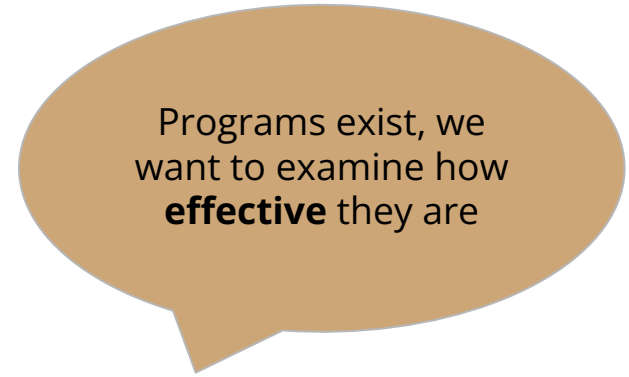
- Education approach emphasizing the modalities in the acronym
- Intending to foster creativity & curiosity
- Integration of different subjects



“Many education experts regard STEAM (and its predecessor STEM) as an essential component of 21st century education.”

- Lathan, 2022

Key Themes: Literature



- **Imbalance:** Lack of girls in STEAM recognized, reasoning not well investigated
 - ◆ Programs created to address (DYD, programs investigated in our research)
- **Effect of COVID:** Shift online caused organizations to adjust programs
 - ◆ Digital Youth Divas: example of how to continue to make a positive impact when transitioned online
- **Barriers:** Research showed that COVID-19 impacted children's socio-emotional development through the barriers it created, financial barriers

Key Themes: Primary Research

Peace Through Play

Cecilia Cormier

Executive Director

Science Club for Girls

Cristina Ullmann

Senior Program Director

- **Universal curiosity:** children of all gender identities are interested in STEM concepts
- **Hands on:** giving the child an active role in play lessons is important to incorporate playfulness and increase engagement
- **Not all bad:** virtual platforms can have benefits as well as drawbacks
- **The great screen debate:** the value of digital play and learning is controversial

Practices, Policies, and Programs

In the classroom:

- After school programs that bring the science curriculum right to the kids
- Providing materials for those participating in crafts
- Consistently showing young girls STEAM role models during class
- Scaffolding great achievement in STEAM activities and assignments by young girls

Out of the classroom:

- Laws and policies that bridge the wage gap
- Taking sexual harassment claims seriously in the workplace
- Empowering more women to take on leadership positions
- Amplifying the voices of women in STEAM fields
- Stomping out misogynistic language and behaviors when we see and hear them

References

- Boakes, N. J. (2019). Cultivating Design Thinking of Middle School Girls through an Origami STEAM Project. *Journal for STEM Education Research*, 3(2), 259–278. <https://doi.org/10.1007/s41979-019-00025-8>
- Thompson, N., Ju, B., Erete, S., Nacu, D., & Pinkard, N. (2021). Sustaining Community and Relationships with Black and Latina Girls in an Out-of-School STEAM Learning Program during a Global Crisis. *International Society of the Learning Sciences*.
- Egan, S. M., Pope, J., Moloney, M., Hoyne, C., & Beatty, C. (2021). Missing Early Education and Care During the Pandemic: The Socio-Emotional Impact of the COVID-19 Crisis on Young Children. *Early Childhood Education Journal*, 49(5), 925–934. <https://doi.org/10.1007/s10643-021-01193-2>
- Lathan, J., PhD. (2022, February 15). *Why STEAM is so Important to 21st Century Education*. University of San Diego Online Degrees. <https://onlinedegrees.sandiego.edu/steam-education-in-schools/>