

February 2023

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Shamini Dias

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Recommended Citation

Dias, Shamini (2023) "STEAM and the Way Forward," *The STEAM Journal*: Vol. 5: Iss. 1, Article 3.
Available at: <https://scholarship.claremont.edu/steam/vol5/iss1/3>

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STEAM is a bi-annual journal published by the Claremont Colleges Library | ISSN 2327-2074 |
<http://scholarship.claremont.edu/steam>

STEAM and the Way Forward

Abstract

The STEAM Journal editorial in which we present this issue and describe our way forward in furthering transdisciplinary thought and practice in the integration and connection of STEM and the Arts. STEAM is poised to become a critical space of thought and practice in research, education, and the arts in addressing emerging complex and global issues.

Keywords

STEAM, future, transdisciplinary

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This issue of STEAM is a long-awaited one for so many reasons.

We finally made the formal move to be fully integrated with the Transdisciplinary Studies program at Claremont Graduate University. And with that came inevitable delays.

But here we are! *The STEAM Journal* is very much alive and ready to get out there again to be a platform that creates space for the arts and sciences to engage in conversation and expression.

In this issue, we feature articles on STEAM in education - picture books integrating STEM concepts, the power of mathematics integration with music and with kite-making, STEAM experiential learning for students in China, the seemingly unlikely yet powerful integration of biology and theatre, STEAM as a productive way to engage in challenge-based learning, and research on the impact on student motivation in STEM subjects when engaged in the arts. We also are excited to share STEAM projects that focus on justice and sustainability in a mining school to integrate environmental justice, an international STEAM oriented symposium for ecosystems and sustainability, and a citizen science approach to learn about bird migration and climate change. These themes are gaining in importance, and we hope to create focused issues in the future on STEAM's role in sustainability and social justice work.

And as always, we present delightful and thought-provoking art – a shape poem, sonic art, photography, and the voices of artists who make this journal a special meeting place for arts and STEM. A first for *The STEAM Journal* artwork is the inclusion of a young author, an 8-grader, who explored a tortoise through a mathematical concept in the form of a sonnet. We hope in moving forward to more intentionally create space for young authors' art, research, and reflective writing on STEAM.

We are very excited about our new – and not-so-new home. Transdisciplinary Studies at Claremont Graduate University was always a champion of *The STEAM Journal*, supporting it from the inception of the journal in 2013 by our Founding Editor, Sara Kapadia who was then a graduate student at Claremont Graduate University. With Sara's graduation and other changes at the university and in her own trajectory of work, we now bring *The STEAM Journal* fully into the Transdisciplinary Studies program. I want to acknowledge Sara's gift to us all in envisioning this Journal and her creativity, persistence, energy, and great generosity in her stewardship of the journal. Sara will always be a part of this work.

In integrating *The STEAM Journal* with the Transdisciplinary program at CGU, we will expand the journal's scope to explore and promote transdisciplinary scholarship and practice in the STEAM space. Boundary crossing is a part of transdisciplinary practice – to move out of our accustomed ways of thinking and working, to connect with different perspective and methods so that we see differently, listen radically, ask new questions, and find new ways to address complex issues. This process is not often comfortable; there is perplexity and paradox when we see through lenses new to us or question assumptions that have long shaped our thought and practice. But from this discomfort – if we persist – comes future- and socially responsible change and innovation. At the same time, we also discover shared capacities. While the

practices and outcomes of arts and STEM might differ, the habits of mind and capacities for exploration, imagination, and creation have much in common. Artists and scientists share curiosity and a sense of wonder, a love of new ideas, the ability to ask critical questions, to identify and define problems, and precision in method whether that's in a science lab, an artist's studio, in stage craft, or performance. When they collaborate, new insights and creative solutions take shape. The role of STEAM in education, research, and innovation grows even more critical in the emerging and future world as new and complex crises and opportunities emerge.

Artists are used to dancing in complexity. We like to make something where nothing exists; to explore new language around a struggle; to listen profoundly; to create new ways to see the world. Why not put artists in problem-solving roles? [National Performance Network 2018](#)

Krys Holmes. Weiter, musician, non-profit administrator, interpretive historian

in upcoming issues, *The STEAM Journal* plans to expand and gather initiatives and questions in realms of research, education, innovation, creative practices, and community engagement where arts-science boundary crossing happens. What is the role and potential of STEAM-based research and education? How does STEAM include and develop different forms of knowledge and ways of knowing, and integrated methods in teaching and learning? How can STEAM-based research and education further inclusion and equity-minded environments and practices? How can STEAM orientations and methods foster capacities for justice and sustainable futures? How do artists use their craft and practice to integrate STEM methods and principles as part of their aesthetic and practice? How does the work of artists challenge, question, and illuminate STEM's impact on humanity and the planet? What might be the role of the artist in supporting sustainable and equitable STEM impact on the world?

These are just some of the essential questions that we can address in this journal. There is so much for us all to share and do together as part of STEAM. *The STEAM Journal* makes space for our ideas and continues as an open space to explore and share creative work, experiences, experiments, methodology, practice, and perspectives of integrating the Arts with STEM disciplines.