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The Creative Thinking & Learning Studio: A Catalyst for STEAM-based Adult Learning

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Abstract

This experience report examines the transformative impact of the Creative Thinking & Learning Studio at the Greenfield Community College, a vibrant hub fostering STEAM education and the Reggio Emilia philosophy of learning and teaching. This case study illustrates how interdisciplinary collaboration and practical engagement in a hands-on environment revolutionize traditional educational practices, shaping innovative, critical thinkers.

Background

This case study serves as a testament to the practical insights gained by two researchers from design-based education, and instructional technology facilitation backgrounds. STEAM education, an empowering integration of Science, Technology, Engineering, Arts, and Mathematics, has risen to prominence as a revolutionary methodology for comprehensive learning (Aguilera & Ortiz-Revilla, 2021; Emerging Technologies for STEAM Education, 2015). By skillfully intertwining *arts* within the STEM framework, STEAM education fosters an environment conducive to nurturing creativity, problem-solving skills, and cognitive agility (Madden et al., 2013).

The paradigm shift from STEM to STEAM signifies an influential transformation in our educational ethos, highlighting the indispensable role of arts as an equal collaborator in nurturing technological proficiency and broadening the intellectual landscape (such as Robinson & Baxter, 2013).

Adopting an arts-centric and creativity-infused mindset facilitates an innovative perspective to interpret and comprehend the world. It allows learners to explore diverse solutions, bring abstract concepts to life, and form a profound and personal connection with their subject matter. Encouraging

such a mindset in education paves the way for a generation of innovators and critical thinkers who can effectively break free from traditional constraints.

The pedagogical merit of STEAM is substantially augmented by maker education, a strategy that emphasizes experiential learning and practical application. However, seamlessly incorporating maker education within the STEAM context presents a formidable challenge for educators. To address this, it is imperative to create student-centered labs and facilities, or “studios”, where learning breaks free from its conventional mold and transforms into a tangible and interactive experience.

Despite the increasing popularity of STEAM education, it often remains inaccessible to underrepresented groups (Charleston et al., 2014). The Creative Thinking & Learning Studio (CTLS), hereby referred to as the *Studio*, situated at Greenfield Community College (GCC) in Western Massachusetts, is dedicated to closing this gap by incorporating the STEAM model and the Reggio Emilia teaching and learning philosophy (Schiller, 1995; Martalock, 2012; Schroeder-Yu, 2008). The *Studio* offers learners of all age groups a unique platform to explore, design, and create, effectively transitioning from traditional learning routes to more immersive, practical, and interactive educational experiences (Youtube, 2022).

The Reggio Emilia Philosophy of Teaching and Learning

The Reggio Emilia (RE) philosophy is a fundamental influence in shaping the enriching, interactive, and hands-on learning experience offered at the *Studio*. It blends art with STEAM education, offering a diverse learning platform to better equip students for the challenges of the 21st century (GCC Youtube, 2022). Originating from the namesake Northern Italian region, the RE approach isn't just a mix of educational theories. It's a complete philosophy emphasizing students' active participation in acquiring knowledge (Schiller, 1995; Aljabreen, 2020). Rather than being passive receivers, students are empowered to be active, rights-holding participants in their educational journey. A central tenet of the RE approach is its student-centered philosophy. It sees students as capable individuals full of potential (Martalock, 2012). This educational philosophy views knowledge as a multi-dimensional construct, shaped socially through the collaboration of students, teachers, parents, and

the wider community (Gardner & Jones, 2016). This perspective transforms the traditional teacher’s role from an instructor to a partner, guide, and researcher in the learning process (Edwards, 2015; Edwards & Gandini, 2018). Key elements of the RE philosophy include artistic expression, engaging environments, and project-based learning, fostering a sense of freedom and democratic values in the learning community (Saab & Stack, 2013; Carter, 2018; Massey, 2017). In this student-focused teaching model, the *Studio* plays a crucial role, providing adult learners at the GCC an expressive platform, encouraging learners to use various “themes” as means for expression, emotional conveyance, and ultimately, learning. Using the approach, learners gain deeper insights into their learning through reflection, art interpretation, experimentation, and emotional expression (Fraiberg, 1977). Moreover, the RE approach aligns seamlessly with the surging body of research on fostering creativity in young learners (Hewett, 2001). The techniques illustrate how an encouraging and interactive educational environment can significantly nurture learners’ creativity, problem-solving acumen, and critical thinking skills. This approach has been an inspiration for educators globally, not merely due to its attractive schools and intriguing artifacts, but for its resilience and imagination in tackling challenges. Figure 1 shows two learner-created artifacts as a part of a learning activity led by Professor Martalock.

The Creative Thinking & Learning Studio

Under the stewardship of Peggy Martalock, PhD, an alumna of the College of Education at the University of Massachusetts Amherst, the *Creative Thinking and Learning Studio* thrives as a warm and inclusive setting for learners across all age groups. The *Studio* transcends the role of a space for solo/group exploration, emerging as a vibrant, pedagogical hub that fosters interdisciplinary collaboration, innovative teaching approaches, and experiential learning. Functioning as a catalyst, the *Studio* stimulates educators to elevate their teaching methods, integrating *Studio* resources into their courses to cultivate immersive and transformative learning journeys.

Rooted in a culture of collaboration, the *Studio* crafts an environment where learners from a variety of academic disciplines can embark on interdisciplinary projects. These projects incorporate the breadth of resources available within the *Studio*, ranging from painting experiments and wind tunnel studies to 3D printing, no-code robotics programming, digital media



Figure 1: Learner-created artifacts (i.e. cultural manifestations) put together using the Studio material.

production, including video editing and drone piloting. Additionally, learners engage with interactive Google Chrome Experiments for light and sound studies, which further their teamwork abilities, communication skills, and exposure to an array of fields and perspectives.

In order to broaden students' horizons further, the *Studio* regularly hosts guest lectures and workshops led by experts from diverse fields. These events provide hands-on learning experiences and insights into various career avenues. Moreover, educators are invited to launch design challenges or "hackathons," utilizing available resources to address real-world issues, a philosophy mirroring the Maker movement (Halverson & Sheridan, 2014).

In terms of research, the *Studio* seamlessly merges with research-oriented courses, enabling students to conduct experiments, gather data, or develop prototypes aimed at learner success using the *Studio's* resources. For cre-

ative arts students in fields such as art, music, or theater, the integration of technology into their creative work paves the way for unique projects, from interactive installations and multimedia performances to digital storytelling.

Beyond tertiary education, the *Studio's* reach extends to local K-12 institutions, enhancing existing curricula while spurring the application of knowledge in novel and creative ways. It facilitates field trips featuring hands-on workshops or demonstrations that resonate with young, experimental minds. The space also becomes a hub for after-school programs that ignite curiosity and interest in STEAM fields for young learners, transforming the learning experience from a mundane chore into an exciting exploration.

For educators, the *Studio* hosts professional development workshops, equipping them with the necessary skills and knowledge to integrate STEAM concepts and technologies into their teaching practices. This approach broadens participation and provides learning opportunities for underrepresented members of local communities. By embedding the *Studio* into courses and teaching practices, educators create a dynamic, engaging learning environment that sparks critical thinking, fosters effective collaboration, and encourages the exploration of new ideas. In doing so, they uphold the *Studio's* mission of transforming education into a creative, innovative, and collaborative experience.

Final Thoughts

Throughout this exploration, we've delved deep into the workings of the *Studio*, the principles that underpin its operations, and the substantial impact it's had on learners. Its establishment as a dynamic, pedagogical hub signifies a progressive stride in educational practices. By fostering interdisciplinary collaboration, implementing innovative teaching approaches, and promoting hands-on learning, the *Studio* truly serves as a catalyst for enriching educational experiences.

The *Studio's* resources, carefully curated and thoughtfully integrated into various learning activities, enable the seamless translation of theoretical concepts into practical, tangible experiences. These resources act as a bridge, connecting diverse academic disciplines and facilitating learners' involvement in interdisciplinary projects.

Reflecting on the transformative impact of the *Creative Thinking & Learning Studio*, it is evident that the space is much more than a traditional class-

room. It transcends the bounds of conventional teaching practices, creating a vibrant ecosystem that fosters innovation, creativity, and collaboration. Its influence extends beyond the physical confines of the *Studio*, reaching deep into the community, local institutions, and beyond. A Google Sites instance has been created to showcase the *Studio's* service offerings, and it can be viewed here: <https://sites.google.com/umass.edu/ctls/home>.

In its essence, the *Creative Thinking & Learning Studio* is a beacon of modern education. It serves as a testament to the limitless possibilities that emerge when creativity is merged with technology, and learning is seen as an exploratory, collaborative venture. This unique fusion of theory and practice, community involvement, and innovative teaching approaches has and will continue to transform the educational landscape, one learner at a time.

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