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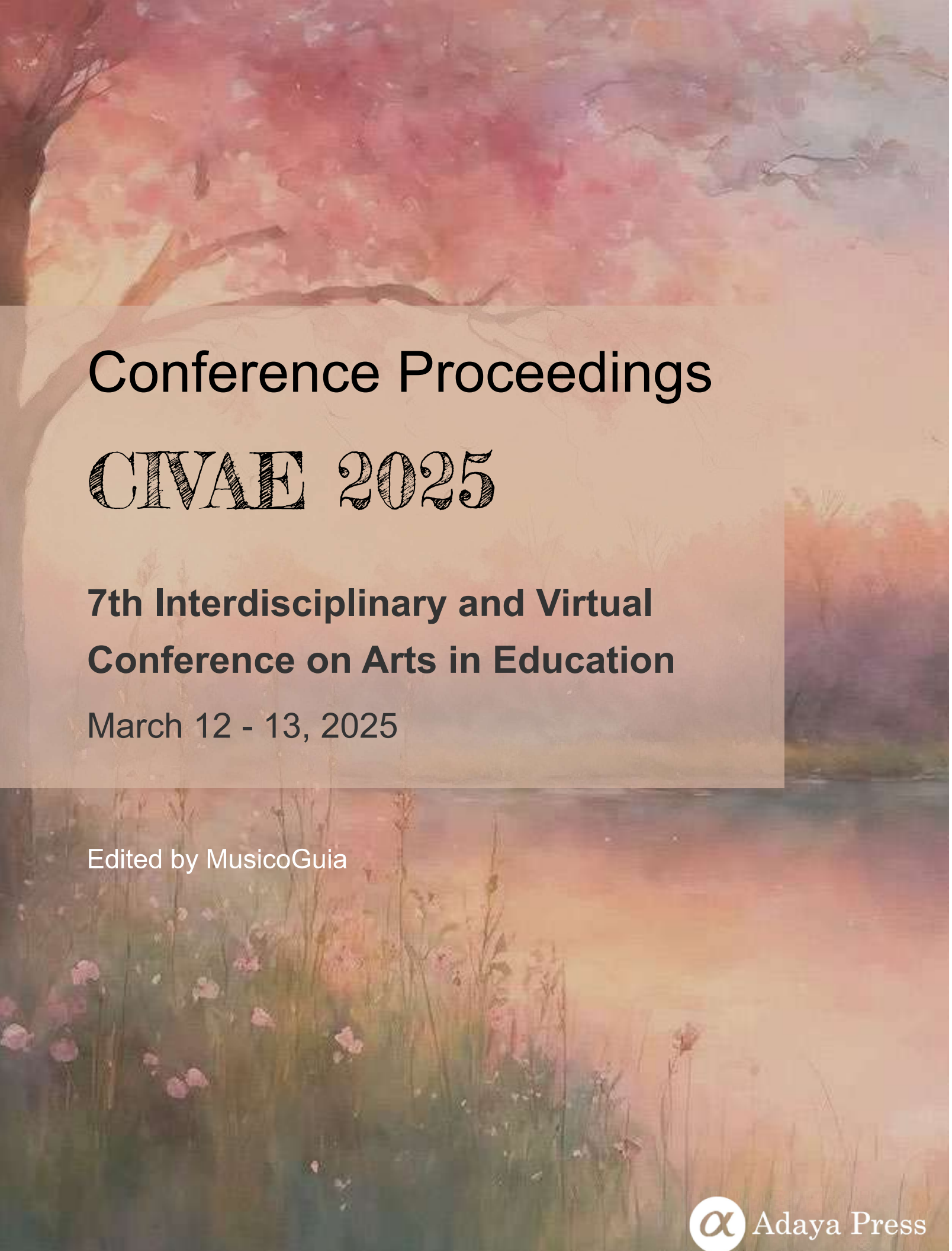
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The pedagogy of failure in experimental art processes: cyanotype and monotype as methods to foster creativity and build up artistic confidence

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Abstract
This paper explores experimental methodologies in art education, highlighting how error and unpredictability foster creative development. By prioritising process over final outcomes, these approaches encourage artistic confidence, risk-taking, and adaptability. The study analyses two sessions from the *Cri_Lab* project, an experimental creative laboratory focused on alternative image-making techniques. The first session introduced cyanotype, a historical photographic process that fosters tactile engagement and experimentation, encouraging students to embrace creative accidents and shift their focus from technical precision to critical observation. The second session explored monotype, a printmaking technique that generates unique, uncontrolled results, challenging students to engage with abstraction and spontaneous mark-making. Both sessions demonstrated that when freed from rigid expectations, students became more willing to experiment, accept mistakes, and refine their artistic decisions. This study emphasises the pedagogical value of error-friendly methodologies, where failure is transformed into a generative force. The integration of cyanotype and monotype into art education fosters process-based learning, encouraging discovery, expressive freedom, and material interaction, where the unexpected becomes an essential element of creativity.

Keywords: art education, cyanotype, monotype, critical pedagogy, art assignment.

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La pedagogía del fracaso en los procesos artísticos experimentales: cianotipia y monotipia como métodos para fomentar la creatividad y fortalecer la confianza artística

Resumen
Este artículo analiza metodologías experimentales en la educación artística, destacando cómo el error y la imprevisibilidad favorecen el desarrollo creativo. Al priorizar el proceso sobre el resultado, estas metodologías fomentan la confianza artística y la adaptabilidad. El estudio examina dos sesiones de *Cri_Lab*, un laboratorio experimental centrado en técnicas alternativas de producción de imágenes. En la primera sesión se introdujo la cianotipia, un proceso fotográfico que promueve la experimentación y la exploración táctil, cuya naturaleza impredecible incentivó a los estudiantes a aceptar accidentes creativos, trasladando su enfoque de la precisión técnica a la observación crítica. La segunda sesión utilizó la monotipia, una técnica de impresión que genera resultados únicos e incontrolables, desafiando a los estudiantes a explorar la abstracción y el dibujo espontáneo. Ambas sesiones demostraron la mayor disposición de los estudiantes a experimentar y aceptar errores al liberarse de expectativas rígidas. El estudio destaca el potencial pedagógico de metodologías que incorporan el error como un factor productivo, transformando el fracaso en un impulso creativo. La integración de cianotipia y monotipia en la enseñanza artística fomenta un aprendizaje basado en el proceso, en el que se valora lo inesperado como un elemento de la creación y en el que se promueve un entorno de descubrimiento, libertad expresiva e interacción material.

Palabras clave: educación artística, cianotipia, monotipia, pedagogía crítica, proyecto artístico.

Introduction

Experimental design research opens the possibility to exert influence or control on different variables of an experiment to study its effects on other variables (Webber & Prouse, 2020, p.347). On the other hand, experimentation in artistic methodologies relates to two important and very connected concepts, individuality and particularity, as a “site for particular knowledges” (Schwab, 2015, p.120). Therefore, experimentality in the context of art education may prove an effective methodology to access particular knowledge with students. In this way, this paper proposes to explore art processes that tend to focus more on the process than the object. This effort of momentarily putting aside objectives towards results, might distance decision making within the creation process from the constraints associated with the need for materialisation. Experimentation creates space to pay attention to events that may occur during the process itself, including error. The idea of failure presupposes that error is an obstacle to the creative process and is associated with this need for materialisation. Removing this concern, failure can be just an error, or even an event, and from this point of view it can be a factor of experimentation and an enabler of creativity (Sawyer, 2019). On the other hand, mistakes can also be a factor of frustration during the creative process. The creation of confidence and artistic identity presupposes learning how to deal with failure and even how to re-signify it. There is therefore a need to formulate artistic methodology techniques that allow for the creation of pedagogical lessons in relation to error and frustration. This text analyses and compares two sessions of the *Cri_Lab* project. An experimental creative laboratory in which visual arts methodologies are used to think critically about the school space, with the aim of promoting literacy and education for space (Andrade, Forthcoming). Each of the two project sessions

mentioned above dealt with an experimental methodology. The term experimental is used here to refer to processes in which the final object is not the focus of attention. Because of the many factors and conditions that condition the final object produced, this focus must shift to the process. The first lesson used the cyanotype method and corresponded to two 1.5-hour sessions. The second lesson was a single 1.5-hour session in which a monotype exercise was carried out. This article will briefly describe the methodology used during each of the sessions. It will then discuss the results obtained, identifying and pointing out the potential of both exercises in pedagogical terms in relation to the place of error and frustration in art education.

The *Cri_lab* photography and monotype sessions

In all sessions, the applied methodology aimed to create an environment where students were active and independent, promoting an error safe environment that allows risk taking to happen, as identified in a cluster of already written papers by Sawyer´s literary review (2017). The approach was inspired by Photovoice, in which participants capture, discuss, and analyse photographs collectively (Langmann & Pick, 2018). Additionally, the sessions were adapted to enhance visual perception, shifting the focus to a more subjective and aesthetic interpretation of space (Andrade & Nunes, forthcoming).

By prioritizing exploration over rigid technical accuracy, the methodology allowed students to experiment freely, embrace mistakes, and refine their creative choices. Through critical observation, visual storytelling, and reflective discussions, it strengthened autonomy and self-expression, reinforcing an atmosphere where artistic risks were not only permitted but actively encouraged.

This methodology enhances the likelihood of errors and creative accidents, integrating them as fundamental aspects of the artistic process.

First Lesson: Photography

Photography in *Cri_Lab* was not merely about capturing images but about fostering a critical and sensitive engagement with the school environment. Sessions were structured to encourage detailed observation of everyday life and stimulate spontaneous discussions about spatial and architectural experiences. A key adaptation of the original methodology was the inclusion of collective image-sharing sessions, which promoted dialogue and reflection. This approach transformed photography into a tool for self-discovery and expression rather than just image production.

A fundamental component of the methodology was the incorporation of cyanotype as a photographic technique. Cyanotype is one of the earliest photographic processes, and its blue tonality results from a chemical reaction between potassium ferricyanide and ammonium ferric citrate. The process itself involves coating a substrate – typically paper or fabric – with a photosensitive solution, exposing it to ultraviolet light in contact with a negative or object, and developing the latent image through a water wash.

This historical process introduced a tactile and experimental dimension to image-making, re-establishing students' connection with fundamental photographic principles, such as the role of light in image formation. Its simplicity, chemical stability, and affordability rendered it an ideal pedagogical tool. Furthermore, the cyanotype process actively encouraged experimentation, integrating error and chance as intrinsic elements of the learning experience. By physically engaging in the development of images, students approached photography as a performative act, reinforcing the methodological emphasis on exploration, critical observation, and creative autonomy.

Second Lesson: Monotype

Monotype is a kind of printmaking technique that produces one-of-a-kind pieces, hence why it is also designated as monoprint. This technique works by spreading paint on a solid flat surface and to manipulate it by using brushes, fingers, or sharp tools. An absorbing surface, most commonly paper, is then spread over the worked paint and pressed to obtain a print. (Abdullah *et al*, 2016) This technique has been used by several artists, such as Edgar Degas, as method of experimentation and material or graphic invention for representation. (Hauptman, 2016).

The number of variables in the process – surface, paint, tools, temperature, solvent, pressure, absorbing surface – establish a very difficult to control and experienced based process. It is also very prone to mistakes and artistic accidents, holding the potential to experience image-making as both an intuitive and performative act. This session emphasized the value of process, material interaction, and the expressive potential of mark-making. In this session students were challenged to try to represent imagined spaces. By observing the process, one can perceive that students start to work slowly and start to experience difficulties trying to represent what is on their mind. As the exercise progressed, students began to demonstrate an increased ability to conceptualise in a more abstract manner regarding representation. They were also motivated to produce a greater quantity of work and to work more rapidly in order to increase the probability of experiencing unforeseen occurrences during the process. In the final discussion, the concept of mistake was discussed has a potential positive and constructive phenomenon in the artistic process.



Figures 1 and 2. Cyanotype (left) and monotype prints (right) produced in Cri_Lab by students, 2024.

Discussion

Both methodologies used demonstrate that artistic experimentation can be used as a pedagogical tool to access specific knowledge, shifting the focus from final objects to process-based learning. In this way, error and failure can be redefined as enhancers of creativity rather than obstacles, an outcome that can also be useful in design learning as it is an iterative process where the practitioner is often faced with failure. (Sawyer, 2019). Thus, this study demonstrates the potential of using visual arts methodologies in design and spatial education.

Another important factor within the study is the tactile engagement with image making through both cyanotype and monotype. The process allows for hands-on exploration, reinforcing critical observation and creative autonomy. Unpredictability encourages students to embrace mistakes as part of artistic discovery, which can contribute to the creation of an artistic identity. Another important factor in relation to identity is the contribution to the development of a positive sense of self through play, expression and engagement within a group (Fletcher & Lawrence, 2018, p.3).

Both methodologies, particularly monotype, are also strong enablers of abstraction in challenging students to adapt to unpredictability within representation.

The process requires empirical learning and iteration, which tend to be compatible with abstraction. To practice the representation of space through abstraction, students tend to resort to sensitive, emotional and open-ended ideas, formulating questions rather than answers reframing space through a critical point of view, among students but also with researchers, when working collaboratively (Knight *et al*., 2016; Andrade, 2023).

In line with Sawyer's (2019) literary review, this study sought to frame failure as an important tool in art and design education, while applying six positive strategies identified in Sawyer's review: the ability to use failure productively, open-ended problem-based assignments, encouraging intentional failure, managing frustration from ambiguity, refraining from giving more specifics to assignments, and providing constructive feedback that encourages student independence.

Conclusions

Cyanotype and monotype has been shown to be valuable tools for fostering experimentation and embracing error as an integral part of artistic learning. Unlike more complex photographic or printing processes, both can be executed using accessible materials and without the need for a traditional photographic laboratory or printing workshop. Experimenting with cyanotype on paper, fabric, or other surfaces allows for an understanding of material responses, enhancing intuition within the creative process.

The acceptance of error as an integral component of the creative process is encouraged by the ability to produce unexpected results through subtle variations in emulsion application, exposure time, or the development process. Mistakes are therefore reframed not as obstacles, but as essential components of the learning experience. Within the domain of cyanotype and monotype, the inherent unpredictability of the process, along with the potential for technical imperfections—including stains, uneven exposures, and poorly mixed solutions—converge to become opportunities for novel discoveries. This paradigm shift enables the incorporation of error as a generative starting point in artistic practice, thereby fostering a paradigm shift in the creative process.

In an era where digital precision predominates in image production, processes such as cyanotype and monotype offer a pivotal counterpoint, incorporating the unexpected and the accidental as vital components of artistic practice.

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