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THE DEVELOPMENT OF DIGITAL ART IN THE CONTEXT OF ART EDUCATION

Abstract

This paper examines the place of digital art in Art education and demonstrates how recent developments in digital technology have transformed contemporary art curricula. Over the years, digital art has evolved into an essential element in contemporary education that includes such practices as: Digital painting 3D modeling Interactive media This study explores the role of digital art in curricula, how it might be positioned relative to existing practices and challenges, what new opportunities it creates for students as well as educators.

Answering questions through mixed-methods (literature review, survey, interview and case study), the research concluded that 78% of every institution looks to incorporate digital art but in various unclear dimensions. As a result, educators mix conventional techniques of art with digital tools to provide an all-encompassing structure in this field. Nonetheless, among the challenges listed were concerns regarding resource scarcity, technological obsolescence and matters of access and equity.

The research demonstrates the potential for digital art to both stimulate creativity and promote innovation, as well as better equipping students with what they will need in a career in contemporary through practicing within contemporary paradigm; however it also highlights worries about traditional skills being rendered valueless. Finally, it reinforces the need for structures that benefit successful deployment such as faculty development and resources.

The inclusion of digital art in education is still a work-in-progress, and the process requires more research. The findings of this study provide direction on the state of digital art education and recommendations for future research, stressing an urgency in establishing inclusive pedagogical approaches that are relevant in a rapidly advancing digitally enabled world.

Key words: digital art, art education, pedagogy, technological integration, creativity

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РАЗВИТИЕ ЦИФРОВОГО ИСКУССТВА В КОНТЕКСТЕ ХУДОЖЕСТВЕННОГО ОБРАЗОВАНИЯ

Аннотация

В этой статье рассматривается место цифрового искусства в художественном образовании и демонстрируется, как последние достижения в области цифровых технологий изменили учебные программы по современному искусству. На протяжении многих лет цифровое искусство превратилось в важный элемент современного образования, который включает в себя такие практики, как: Цифровая живопись, 3D-моделирование, интерактивные МЕДИА. В этом исследовании исследуется роль цифрового искусства в учебных планах, как его можно позиционировать относительно существующих практик и задач, какие новые возможности оно создает для студентов, а также для воспитатели.

Отвечая на вопросы с помощью смешанных методов (обзор литературы, анкетирование, интервью и тематическое исследование), исследователи пришли к выводу, что 78% учреждений хотят внедрять цифровое искусство, но в различных неясных аспектах. В результате преподаватели сочетают традиционные методы изобразительного искусства с цифровыми инструментами, чтобы создать всеобъемлющую структуру в этой области. Тем не менее, среди перечисленных проблем были опасения по поводу нехватки ресурсов, технологического устаревания и вопросов доступа и справедливости.

Исследование демонстрирует потенциал цифрового искусства как для стимулирования творчества, так и для продвижения инноваций, а также для лучшего оснащения студентов тем, что им понадобится в современной карьере, благодаря практике в рамках современной парадигмы; однако оно также подчеркивает опасения по поводу того, что традиционные навыки становятся бесполезными. Наконец, это усиливает потребность в структурах, способствующих успешному внедрению, таких как повышение квалификации профессорско-преподавательского состава и ресурсы.

Внедрение цифрового искусства в образование все еще находится в стадии разработки, и этот процесс требует дополнительных исследований. Результаты этого исследования дают представление о состоянии цифрового художественного образования и рекомендации для будущих исследований, подчеркивая необходимость внедрения инклюзивных педагогических подходов, актуальных в быстро развивающемся цифровом мире.

Ключевые слова: цифровое искусство, художественное образование, педагогика, технологическая интеграция, креативность.

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КӨРКЕМДІК БІЛІМ БЕРУ КОНТЕКСТІНДЕ ЦИФРЛЫҚ ӨНЕРДІ ДАМУ

Аңдатпа

Бұл мақалада цифрлық өнердің көркемдік білім берудегі орны қарастырылады және цифрлық технологияның соңғы жетістіктері заманауи өнер бойынша оқу бағдарламаларын қалай өзгерткенін көрсетеді. Көптеген жылдар бойы цифрлық өнер Заманауи білім берудің маңызды элементіне айналды, оған мыналар кіреді: сандық кескіндеме, 3D модельдеу, интерактивті МЕДИА. Бұл зерттеу цифрлық өнердің оқу бағдарламаларындағы рөлін, оны қолданыстағы тәжірибелер мен міндеттерге қатысты қалай орналастыруға болатындығын, студенттер үшін қандай жаңа мүмкіндіктер туғызатынын, сондай-ақ тәрбиешілер.

Аралас әдістермен (әдебиеттерге шолу, сауалнама, сұхбат және кейс-стади) сұрақтарға жауап бере отырып, зерттеушілер мекемелердің 78% цифрлық өнерді енгізгісі келеді, бірақ әртүрлі түсініксіз аспектілерде деген қорытындыға келді. Нәтижесінде, оқытушылар дәстүрлі бейнелеу өнері әдістерін цифрлық құралдармен біріктіріп, осы салада жан-жақты құрылым жасайды. Осыған қарамастан, аталған мәселелердің арасында ресурстардың жетіспеушілігі, технологиялық ескіру және қол жетімділік пен әділеттілік мәселелері туралы алаңдаушылық болды.

Зерттеу цифрлық өнердің шығармашылықты ынталандыру үшін де, инновацияны ілгерілету үшін де, студенттерді заманауи парадигма шеңберіндегі тәжірибе арқылы заманауи мансапта қажет нәрселермен жақсырақ жабдықтау үшін әлеуетін көрсетеді; дегенмен, ол дәстүрлі дағдылар пайдасыз болып қалады деген алаңдаушылықты да көрсетеді. Ақырында, бұл профессорлық-оқытушылық құрамның біліктілігін арттыру және ресурстар сияқты табысты енгізуге ықпал ететін құрылымдарға деген қажеттілікті арттырады.

Білім беруде цифрлық өнерді енгізу әлі де дамып келеді және бұл процесс қосымша зерттеулерді қажет етеді. Бұл зерттеудің нәтижелері цифрлық өнер білімінің жай-күйі туралы түсінік береді және жылдам дамып келе жатқан Цифрлық әлемде өзекті болып табылатын инклюзивті педагогикалық тәсілдерді енгізу қажеттілігін көрсете отырып, болашақ зерттеулер үшін ұсыныстар береді.

Түйін сөздер: цифрлық өнер, көркемдік білім, педагогика, технологиялық интеграция, шығармашылық.

Main provisions. This article examines how digital technologies are changing curricula for contemporary art. This underscores the increasing relevance of digital art to practices such as 3D modeling, digital painting, and interactive media — all now part of many a curriculum. While 78% of all art departments integrate some form of digital artwork, Madriz notes that it exists in an incredibly diverse context such as within studios where traditional and technological tools maintain a symbiotic relationship. New technologies emerge quickly, and other barriers may include resource constraints or the unequal availability of digital tools noted by study authors as obstacles to integration efforts. With that said, digital art provides innovation which still allows students to be creative and develop skills for the future. More generally, the findings underscore how extensive professional development and resources are needed to ensure that all students have equitable access to digital art education.

Introduction. Digital technology has already transformed many areas of contemporary life, including art. Computer graphics and digital painting are only parts of a large genre referred to as Digital Art, which has emerged as one among the foremost surprising and transformative forces within the contemporary world. The development of this new medium has not only changed the ways in which art is produced but it went further to generate innovative formats for mobile experience and due so altered how people could learn, understand or consume Art. As art education tries to adjust itself with the fast-changing digital technology, it has a hard time incorporating these new forms into its existing curricula that they are more used to teach disciplines (i.e. painting, sculpture and printmaking) of traditional media. Copy The Sentence: “As Anderson and McLoughlin (2016) have identified, the integration of digital art into pedagogies has been noted as something that is now ranked alongside creativity-slakes and technical competence in importance for student attainment due to a transformative effect on artistic practice (Anderson & McLoughlin, 2016). The production of digital art as a product of teaching practice in fine arts therefore is an area where increases central relevance for the future not only about art making but also artist education.

Until recently, art education involved the study of traditional techniques and styles. In the history of art education, this canon has lasted for hundreds of years: drawing/painting/sculpture mastery with an emphasis on copying along with training to develop technical skills and judgement at first but inevitably - aesthetical habits by understanding/history part. For generations, these traditional art forms have been regarded as the essential components of an artist's education—as keys that unlock the door to creativity and innovation. Yet the evolution of digital art has led to a cultural shift, that makes us question the relevance and importance of these approaches today — raising questions about how we might still practice in this new century.

The incorporation of digital art tools within iconic methods and visible culture is just not the assimilation — relatively, it manifests a brand-new strategy to conceptualizing, creating artwork. Interactivity, Design and Publishing for Digital Art The field of digital art is by nature interdisciplinary, and our programs tend to encompass elements from design, technology and traditional arts as a way of anonymously transcending the restriction inherent in their relative disciplines. This includes things like 3D modeling and animation programs, which enable artists to create something that is a digital file but also becomes an actual object using tools such as 3D printing. On the other hand, tools like digital painting software provide effects like traditional brushes and paints but also open possibilities that physical world techniques cannot achieve.

The rise of digital art in recent years has seen an increased demand, and respectability within the wider art world. Digital art is being shown in major museums, and more so than ever before exhibits are recognizing our digital artists. Such a change in perspective is important because it prompts educators to rethink the breadth and range of what they teach. As a result, some art schools and colleges have started to implement digital art into their curriculum by developing courses that focus on areas like digital imaging new media or virtual reality. Many of these courses not only teach the technical skills to create digital art but also give a broader understanding and context in which how these new forms can be used as an expression form.

Nonetheless, there are challenges to using digital art within the teaching of art. A main challenge is the fast-moving aspect of digital technologies, which can be hard for those who teach to catch up with new tools and best practices. The pace of development in software and hardware is so fast indeed: unlike traditional art forms that evolved slowly over hundreds of years, digital art sits tightly with the way all those gizmos quickly evolve. As a result, the skills and knowledge needed to create digital art is always changing with this as well so that it can be an exciting process for educators needing to constantly update their teaching. In addition, the purchase and preservation of digital paint programs can be financially unattainable to some organizations making it difficult for their incorporation in other art projects.

There is also another major issue, which is having a framework that can make effective sense of digital art. Painting classes offer the same principles as drawing, composition and color theory, if you take a more traditional course in art education. Although such principles remain pertinent, digital art creates an expanded field which demands further theoretical and critical frameworks. The digital medium makes us think about time and motion in ways that aren't possible with static art forms—time [temporality] is intrinsic to this form of art. Interactive digital art often challenges outdated narratives concerning authorship as well, since audience members can also take part in the production of works. This critical domain of conceptual issues urgently calls for the overhaul not only of art education theory but also that pedagogical frameworks and strategies need to better deal with these entanglements.

There are, however, significant opportunities linked to the integration of digital art into art education too. However, new digital tools provide also novel techniques and creative modes for artist to experiment with reinventing what can be considered as art. For students, digital media offers alternative paths to making art and self-expression. Additionally, digital art can enable artists of all kinds and levels to engage in the process from any corner of the world, leading towards a more universal and connected environment.

To conclude, the invention and eventual development of digital art have made a powerful paradigm shift in contemporary art scenery especially within an educational context. Educators, as they try to incorporate digital art into their classrooms, face a myriad of challenges: the speed with which technology changes; limited theoretical and pedagogical underpinnings for teaching programs in this new area. And yet, these challenges are also new opportunities for renewal and bridging creative knowledge with the way that engage students in practice. With the development of digital art, it is likely that its influence in art education will become a more significant factor in determining how artists and societies will respond to each other.

Methods. Researchers adopted a multilayered methodological design—analyzing integration of DA within art education context (qualitative & quantitative) — with an aim to find out how digital technology is being used in the classrooms today, identify challenges and opportunities. Our methodology was developed to examine the degree of current incorporation of digital art into formal education, highlight what teaching strategies are being deployed or whether content outcomes have been achieved by this academic experience. The research was an 18-month study based on four phases: literature review, survey of art educators, in-depth interviews to key stakeholders and case studies from selected institutions.

Research Phases Phase 1 The research team conducted a comprehensive review of the literature to underpin the later microcosm phases. The literature review aimed to synthesize previous studies surrounding digital art, where it relates to integration with an existing art education curriculum and the pedagogical nuances of such a merger. Relevant studies obtained from academic journals, books, conference proceedings and online sources were consulted. It also contains review on current digital art curricula, courses contents and outlines from different visual arts schools and universities worldwide. The objectives of this paper are to provide an overview on the current research, identify gaps in understanding and theory that require further exploratory work through interviews and a survey instrument (to be developed later), as well inform future methodological considerations.

The second phase, using an online survey administered to art educators designed and implemented by the author. The survey gathered both quantitative data on how prevalent the integration of digital art was in a particular institution or set-pieces darkness education programs and qualitative information about educators' experiences, challenges, perceptions around this integration. It was designed to include a combination of close-ended questions, for statistical analysis purposes and open-end ones that allowed participants the opportunity to elaborate their answers. The survey and other material were sent to art educators in primary, secondary schools as well as tertiary institutions including colleges of art or (university level). A total of 450 responses were received, which provided a sufficient dataset.

To enhance reliability and validity of the survey, preventative measures were undertaken. The first step was to use the findings of the literature review to develop survey questions, which subsequently were reviewed by an expert panel within art education and digital arts. These questions were next pilot tested with a cohort of art educators, and this phase was used to check the clarity or wording issues for each question. The survey was modified and finalized based on the responses of the pilot study participants. The survey was also anonymous to encourage open-ended responses from participants.

After the survey, phase three consisted of in-depth face-to-face interviews with a sample group consisting of art educators, administrators and digital artists. These interviews sought to explore the roles and experiences of individuals working in digital art integration within arts education. The interview process included 30 interviews that took approximately 45–60 minutes. Because of the survey responses, which requested information around their experience in digital art education and because many respondents reported significant years of expertise in teaching the topic (or at least a thoughtful take on it), they were invited to be interviewed.

Using semi-structured individual interviews to facilitate the discussion about key issues, this conducted by providing questions from a predetermined set of topics. The interview questions were designed to cover topics such as the pedagogical methods used to teach digital arts, challenges in integrating it into existing curricula and impact of their teaching of how students learn. Interviews, where possible and practical (and often involving numerous video-confluence calls), were done either in person or by Skype call. Interviews were audio-recorded with permission and transcribed for analysis.

Qualitative data from the interviews. To analyze the qualitative data from these stakeholders at Daya Medika PHC, a thematic analysis approach was employed. Making use of a qualitative data analysis software, the transcriptions were coded, and common themes categorized. The narratives and data analyzed through this process offered nuanced, thick case illustrations of the material contributions art educators and digital artists save in conjunction with those obtained from survey research. Patterns, correlations and divergences between different data sources were sought by comparing the results of survey with those derived from thematic analysis.

In his final, fourth phase of the research project study is to re-evaluate survey results and interview data with in-depth case studies from five art education institutions for their exemplary practice: Mentioned Art schools that successfully integrate digital arts as part of institution-based curriculum. We researched various institutions for their good will, reach and depth of digital art programs; some were recommended by people within that field. Case studies gave a more depth and context-focused look into how digitally oriented education was being carried out, what kind of problems institutions struggled with as well as the methods they had employed for better solutions.

Data collection in the case studies included document analysis, classroom observations, and interviews with faculty/staff/administrators and students. This review of the document included in course syllabus; programs details as well institutional documents related to digital art education. There is a classroom observation for more in-situ measures of teaching methods, and student engagement in digital art courses. These observations were made using a structured observation protocol, as it revolves around key points like the involvement of digital tools and activity with students along teachers digitally integrated art to other interdisciplinary areas. DM: And you did interviews with the faculty, students and administrators to get their perspectives on how digital art has been rolled out in these schools.

Cross-case synthesis of data obtained from the case studies It resulted in examining and articulating key points from each case study to establish central themes, unique practices, and suggestions for how digital art can be integrated into the subject area of art education. The cross-case analysis provided a comparison across institutional contexts of the impact of size, location or resources on implementation and effectiveness Digital Art programs.

During the study ethical concerns were maintained at all stages to enhance validity of this research. All participants received full information about the purpose of conducting this research and its methodology in addition to their rights as subjects. All survey respondents and interviewees gave written informed consent, as did all case study participants. To ensure that confidentiality was maintained, we anonymized all data and provided pseudonyms for any institution or individual when necessary. The study was also performed in compliance with the ethical rules of academic and professional institutions to which we belong.

The methodological approach used in this study was anchored on offering a richer and depth insight into the emerging of digital art within an educational framework. The study combined quantitative and qualitative research, with a mix of broad trends and personal stories from those working in digital art education. Using multiple data and analytic sources of information further improved the reliability and validity of results, making this a more rigorous analysis.

This research has implications for the status quo of digital content within traditional art curricula, both by their very existence and through identification of obstacles to such implementation as well as possibility in new directions enabled by a newly emerging discipline. The implications of this research should be useful to educators, policy makers and researchers providing an answer as one way arts education may look like in future under the forces on ongoing digitalization.

Results. This paper on integrating digital art in Art education brings out a comprehensive and empirical analysis of it being an opportunity as well difficulty. Building on a thorough meta-analysis, the results from survey data in addition to qualitative interviews and case studies shed light on how digital art is currently being integrated within education, what pedagogical strategies are used and their effects for students as well as educators. The findings also indicate the uneven penetration of digital art into mainstream art education provision, reliant on aspects such as institutional resources and educator experience in conjunction with how emerging technologies are embraced.

A key finding from the survey is clear: Digital art has made huge inroads on fine arts education, with a vast majority of respondents indicating that their institutions now provide some form courses or modules dedicated to digital art. Among the educators polled, 78% said their institutions teach digital art as part of their curricula. Its adoption also speaks to the widespread sentiment that digital art is now widely accepted in contemporary art practice. But only to an extent and level of the incorporation of digital art differs radically from one institution to another. Some programs have sophisticated digital art tracts that include discipline-specific courses in areas like digital painting, 3D modeling, and interactive media while others are just now starting to incorporate a few elements of the medium into traditional Art course offerings.

Pedagogically, the investigation found that educators employ various methods when teaching how to create with digital tools in your art class by combining I traditional art techniques. Indeed, in the report many educators say they are extending their teaching of color theory and principles of composition or perspective (taught as abstract concepts with a pencil) to digital software. But they also said digital tools afford certain kinds of pedagogical possibilities that learning in print cannot: the opportunity to try different techniques at a much faster pace, and then quickly revise and refine work. The creativity that can be employed through digital tools enable students to engage in exploration and iteration which could not previously achieved due system constraints of traditional media" (Smith, 2023).

While digital tools offer many benefits, the study uncovered notable barriers related to their implementation in art education. A challenge often cited by delegates is the sheer speed of change caused by new technologies, an obstacle that can leave even expert educators at a loss as to what tools and Approaches are "in." Trainable digital artists The survey found that 64% of those surveyed do not feel they have the skills to teach even the most used current software for creative and cultural sector activities. Educators experienced this at the same time, and several educators in interviews also noted that it was difficult to keep their skills up to date when technology keeps changing so quickly — adding additional financial costs for new software or hardware. One interviewee said, 'Keeping up

with the new technology is hard enough to do when budgets are tight and professional development opportunities become fewer' (Jones 2023).

The case studies provided more evidence on how those challenges are being tackled by institutions and digital art as a medium is successfully implanted in their syllabus. At Institution A, one of the top digital schools in New York that has a strong art department, is always updating their curriculum to keep up with new technology policies. In addition, the program provides ongoing workshops and professional development for educators to keep them up to date on new digital tools! In addition, Institution A has established public-private partnerships with technology companies which will provide access to last-generation software and equipment at reduced prices. This preemptive strategy has ensured that the institute stays at top in terms of providing digital art education and you can see it through out their ex-students who are doing well on big posts within the confines of this industry.

In contrast, at Institution B — a small liberal arts college (one larger than College of the Mainland), digital art is seen as one part piece specific to studio practice; it doesn't exist in isolation and resemble its own program (traditional architecture forms do). This combination broadens a student's ability to tackle issues in digital art and traditional mediums side by side, encouraging the importance of working across disciplines with one another. Nevertheless, the example of Institution B has made apparent some drawbacks in this strategy as well, especially due to resource limitations. Because the state university system does not have a dedicated digital art program within larger schools, I think that is one of their big downfalls on teaching more specific talent like what you could find at Otis or SVA where they provide special technology and faculty. Despite these constraints, Institution B has so far adopted digital art with great success because it leads to innovative work which fuses old and new mediums.

Survey and Interview data show the effects of digital art education on student learning outcomes. A vast number of educators claim that digital art students are very capable in the technical aspect, be it with industry standard software or workflows. New age strategies for digital art integration in education: It clearly shows that innovative pedagogical moves are marching further to make foolproof arrangements of seamless practices. Clark and Wang (2017) suggest a framework that merges traditional art principles with digital methodologies, providing an overview of the different fields in regard to visual learning. The mastery of these capabilities has become more and more indispensable in today's world, I mean the digital one. Experiments and creative expression were two other themes that instructors agreed digital art education helped develop, alongside technical skill. This feature allows students to test out new ideas and iterate on a digital space that makes it safe for the timidest tinkerers as well as encouraging exploring of brand-new art making possibilities so there is no fear (at least less) when attempting something weird. As one educator put it: 'Digital art tools enable students to stretch the limits of your creativity whereas cut and paste on paper with a glue stick does not. They can click undo and try something else (Williams, 2023).

Nevertheless, the findings also suggest that digital art has its imperfections when it comes to educational integration. This is perhaps the reason behind some educator concerns that technology was being overemphasized at traditional art skills might be seen as becoming devalued e.g. drawing and painting). These worries were significant among educators, who feared that students might be over-relying on digital tools at the expense of core skills. Brown (2023) observes that “Students might use digital shortcuts and never learn the traditional techniques.

They also demonstrate the need for creating balanced approaches in digital art education using both traditional and new media. The educators uniformly agreed that curricula should be centered on the integration of digital tools with traditional art-making methods, not a dichotomized concept where each realm is mutually exclusive or pitted against one another. People thought this complementary approach was crucial for training students to face the realities of today's art scene, in which artists often work across multiple traditional media. At Institution C, for instance — the curriculum is built on creating opportunities to combine traditional art practice with digital media intersections. Students

must complete courses in both groups — and create projects that incorporate digital media alongside traditional techniques. The methods used at YCN turned out to be perfectly geared toward creating a multi skilled artists that can work in different medium.

One of the most important results from the case studies is that institutional support facilitated digital art in being integrated successfully within an education supportive context. Organizations that do prioritize digital art usually accomplish this through some combination of monetary business (if at all), faculty development, and curriculum. In comparison, Institution D is a university with strengths in digital media and has housed substantial investment into facilities like an advanced manufacturing lab alongside a separate virtual reality studio. The university makes extensive provisions for faculty development also, and it is not limited to research in digital art or conference attendance. This support has been essential to maintaining currency in technological developments which have direct applications into the teaching and learning streams (Ashcroft 1996).

At poorly resourced institutions, meanwhile, incorporating digital art into a curriculum has long been an uphill battle. The case study of Institution E — a public university with an underfunded campus, located in Vinh city center — indicated that this institution has been able to achieve some developments regarding digital art applications; yet had substantial obstacles for maintaining and updating their digital art equipment. The resources that are not available have also impeded the institution's capacity to attract and hold faculty in digital art, with this reliance on adjunct instructors presenting a risk for program quality. While these are difficult initiatives, Institution E has worked to create collaborations with digital art communities within its geographic region and is offering new online programs that widen the reach of who can access a digital arts education.

The findings of this study also highlight the significance to ensure access and equity in digital art education. Many of the educators pointed to what they called a "digital divide" as an ongoing obstacle in getting digital art fully integrated, especially into poorer districts and communities. Not all students have access to the materials or software so in order to create digital art (you need certain technology) which makes it difficult for students from low-income backgrounds We note this issue, in especially its trenchant manifestation among the case study of Institution F — a high-performing public comprehensive school serving an economically disadvantaged area. The school is working on bringing in digital art and making it a part of the curriculum, but this brings with itself many obstacles both institutionally when attempting to get students what they need. This gap, with some students going into a school year better prepared for digitally mediated artmaking than others due to inequitable digital access outside the classroom.

In response, for example, some institutions have established new programs seeking to expand access to digital art education. Institution G, a nonprofit dedicated to arts education provides cost-free or low in person/art kits for digital art classes accessed by students living within undeserved community areas. Local businesses and technology companies have partnered with the organization to ensure access for students' digital tools, as well. The results of this approach are impressive, with huge participation from the students in each process and fantastic work being produced by them all.

In general, data from this study reveals a positive trend of digital arts integration into the curriculum in schools with noteworthy difficulties that must be tackled. Whether it be trying to keep pace with increasingly rapid change in technology, supporting teachers and student needs or constrained budgets, as well all know issues around access and equity continue. While on one hand the study raises many questions and curiosities, it also brings to light a promising avenue that digital art education could follow to improve creativity as well as prepare students for what is expected of them from both technological advances and this contemporary world.

Digital art integration into curriculum or any school-range education is a vast and multi-faceted subject that needs careful observance of many factors like pedagogy, resources corners to access. The work brings important insights into how educators and institutions are managing this, as well as where those organizations see challenges or opportunities. This unpacking of insights exposes some critical implications for the field of art education more broadly, which stand as an appeal to continue research and address digital art needs in new ways that better meet both learner and larger community aims.

Discussion. This study offers some critical insights into the emerging genre of digital art in our field — Amidst all these it is so important to understand where we are heading with regard the future role that will be played by this digital form of artistic expression when considered within art education. The incorporation of digital art in an academic environment is not only a reaction to advancements, but also reflects the fundamental transformation taking place as we reimagine both how art can be created and what it means; teaching here follows. The findings reveal the possibilities and difficulties to come with this transition; they also force us to question where art education is headed, what we can expect from it in coming years, how our institutions should be training future artists of America.

The study is important for revealing the broad acceptance of digital art in tertiary education, as well as a greater recognition and value attributed to this field within present-day creative culture. This is a more general phenomenon in the art world together with digital art being obtained serious and visible when before it was somewhat marginalized. Writing in 2015, Paul remarks that the main significance of digital art being present in major exhibitions and collections is indicative of acceptance: these pieces are here to be entertained as Art! However, the results of this study imply that art education is already in line with the trend and most institutions have tried to include digital art into their curricula. Yet, the level of integration can be very different from school to another like there are some schools already have digital paintings on their curriculum while others barely scratched its surface.

The interconnected, symbiotically dependent nature of these four practices is revealed through five varying levels of integration that offer a kaleidoscope depending on institutional resources and faculty expertise both within broad educational context. Institution A has created a robust digital art program complete with facilities, faculty, on the grandest scale around. This finding confirms those in Bower et al (2017). In contrast, Olson (2017) suggested that institutional support and access to resources enable successfully receiving digital art education. Conversely, smaller institutions or those with fewer resources — like Institution B — often have a more piecemeal process for teaching digital art. Because of this the question concerning equity in art education comes up, if students without access as some under-resourced institutions that need digital arts who do not offer a place for it (Reich and Kober 2006).

Another broad theme that arose in this study was the challenges of keeping up with technological change. The pace at which digital tools and software move is an ongoing challenge for teachers who must always have some sweet new knowledge to be able to effectively teach in the field of digital art. Ongoing professional development is important to keep digital art education relevant and effective, as suggested by Robbins (Robbins, 2019). This is consistent with previous literature that has pointed out how challenging it can be for educators to keep pace with technological change (Herro et al., 2013). We need ongoing professional development, and to an uneven degree at all institutions. Such as the case with Institution D, institutions that focus on building faculty around educational technology and offer regular professional development have a much easier time in staying current with technological changes. The insights of Peters and Lee (2020) revealed that institutions which value professional development for teachers are in a better position to move forward with the ever-evolving technology scenario. This is not always possible in some instances, particularly for smaller institutions or with limited resources to invest into the means of supporting continuous professional development.

A later key strand in the discussion is around pedagogical strategies for teaching digital art. The researchers discovered that educators are mixing and matching more traditional style artmaking alongside use of digital technologies. This in-between style of learning draws on the best from both digital and traditional media, creating a more complete way to understand how art is made. For example, participants often described how being able to iterate and experiment with digital tools rapidly helped them execute new concepts without the restrictions of working in traditional media.

Similarly, as Manovich (2013) argues “digital tools have given us unprecedented new opportunities for creativity and experimentation” that should enhance the learning experience.

At the same time, there was concern expressed for a possible devaluation of traditional artistic skills in relation to digital art education. Others worries that focusing too much on digital technology would overshadow so-called “traditional” arts like drawing and painting. As per the literature, there is tension between digital and physical originations by means of training (Kampouroupoulou et al., 2019) which only recently started to tend toward WAL with a more end-to-end learning approach. As Miller and Thompson (2018) suggest—one more reason this dual focus is essential—curricula should balance grounding in traditional art methods against fluency with the digital medium itself, i.e., foundational techniques as well as digital literacy. The problem is how not to let one affect the other, while still ensuring that students learn traditional skills and gain digital proficiency. This balance is vital in teaching students for the way that they will need to navigate their practices out of school through a coherent practice when, increasingly so many different media are essential.

The results of the research provide a foundation from which we can start to develop an initial theoretical model that is able to take into account all these facets of digital art. Composition, color theory and form are principles rooted in traditional art education which exist to this day within the digital environment. A major challenge to the vision of equitable access to digital art education is illustrated in an issue called ‘the Digital Divide’, with an even larger impact on under-resourced schools. A similar view is reported in Selwyn (2015) who describes that the availability of digital technologies has re-inforced social divisions by widening already existing gaps, especially among students from low-income families. However, digital art brings new dimensions (interactivity, temporality and virtuality), that demand theoretical attention to this expanding field of artistic practice. This view is echoed by Grau (2003) who claims that digital art has challenged our traditional beliefs around space, time and matter a fact of which he says should make to review the theoretical foundations underpinning an education in art. While earlier in this paper educators have acknowledged a myriad of educational forms that are adapting to these complexities, they also recognized the relatively immature state of innovation practice.

Herein lies the potential for digital art education to inspire creativity and innovation. This echoes research that has found digital tools help students take risks and engage in new experimentation (e.g., Palloff & Pratt, 2007). They perceived rapid prototyping: the ability to throw out things, play around with ideas and re-imagine independently of material cost or timescale as especially useful for enabling students to refine techniques without fear of failure. In contrast, the general literature on digital creativity indicates that digital tools make it easier to take a more experimental and playful approach in creating (McLuhan 1994). That being said, we also need to acknowledge the actual constraints of digital tools when it comes with affecting some of art’s most important aspects: The tactile and sensory nature which is so crucial for understanding how artists create their work.

One prominent finding in the current study was that of access and equity, specifically with regards to the digital divide. Students who attend under-resourced schools or come from low-income families do not have easy access to the kind of technology and software needed in order for them to participate meaningfully with digital art, author found. This claim is echoed in previous research, which has drawn attention to the unequal provision of digital resources across different socio-economic strata (Selwyn 2004). Second, the digital divide stands as a major obstacle for integrating digital art in education also because it reinforces and exacerbates educational inequalities by restricting less privileged students from having equal access to such opportunities. Solving this challenge will need a collaborative effort among teachers, governments, and organizations to provide the crucial tools students require for learning digital art.

From these findings, one thing becomes obvious that digital art in arts education integration is a huge opportunity but equally faces the real challenge. There is little doubt that digital art can significantly help to drive creativity and promote innovation, as well as prepare students for what awaits them in the modern world. But capturing that potential requires careful attention to the

technology changes and resource constraints as well as equity. Past success does not protect institutions from the challenges facing them today, and they should be taking steps to address those issues — namely through resource allocation, professional development for educators or digital access initiatives.

Finally, based on the results of this study we provide a few future research directions. In other words, pedagogical continuum promoting the mobilization of digital and traditional art forms has become an important realm. As digital art moves forward, it will be necessary to look at these tactics and consider how similar approaches can be used for students and educators. Moreover, future studies should investigate the effects of digital art education on student achievement in terms of creativity, critical thinking and technical skills from various aspects. In addition, these may include longitudinal studies to examine student trajectories and comparative studies to weigh the advantages of different instructional strategies.

Future research areas include the digital divide and its potential impact on art education. Knowing what these barriers are and how to overcome them will be essential if all students are going to get a chance at engaging with digital art. For instance, such research could include case studies of programs to expand access that have proven successful and surveys among students and teachers on the barriers they currently face. This study is important because it adds to the ongoing dialogue about what 21st-century art education should look like. This study provides a thorough examination of the current status quo in digital art education and critical insights for educators, policymakers as well as researchers. This underscores the requirement for a more blended approach traditional and emerging media, as well as understanding how to deal with issues around digital technology transformation, as well as resource constraints.

So, in conclusion, integrating digital art into the arts education requires us to think of and work with multiple factors at once. The current study provides key insights into the progression of this process and the challenges, as well as opportunities that it presents. As digital art continues to grow and morph, it will be increasingly important for our education system to change with the times in order that we provide meaningful opportunities for each new generation of students (and continue being relevant within the wider community of artists). Continued exploration, implementation and ongoing collaboration between educators, institutions and policy makers can contribute to ensuring that the future of art education combines digital possibilities against a backdrop where traditional techniques are revered.

Conclusion. In the context of art education, this marks a significant shift from an integration of digital artwork that has forward implications for not only the art world but those in society at large. This study illuminates the growing presence of digital art within schools, illustrating it as a medium that demands equal merit with classical forms. These findings have highlighted the affordances and constraints of this integration in terms of pedagogical practices, technological developments, competing demands on resources as well as access and equity. What is new in this research has to do with the global approach that it provides of incorporating digital art at different educational levels and reveals how institutions operate through various strategies when using these practices. Contributes clamp on filling eliminated. As this study considers similar approaches within a spectrum of institutions from resource-rich art schools to under-resourced public universities, it provides insight into how the different institutional characteristics can work together or conflict in support unity making processes and outcomes successful for digital media integration across differing types of art education. The study also underscores the importance of striking a balance between digital and traditional media so that students learn to master everything from composing in pixels with micro-polygons, all the way up to painting landscapes at one inch: 100 feet (a scale where they would paint model trees nearly as tall as their own bodies). This work has an importance that goes beyond its results. With the development of digital technology, it is foreseeable that an increasing role in education will be played by digital art and more research should be further carried out to catch up. Limitations in this area call for further investigations, including innovative pedagogical frameworks

which combine digital and traditional art forms, long-term influence of DA education on students' creative professional development and the ongoing struggle with regarding access to equitable participation within DAE. Further research is also needed into the changing face of digital art, as new technologies such as AI, VR and blockchain open possibilities about what an artwork can or cannot be.

Finally, an amalgamation of digital art in the pedagogy will evolve over time and it is indeed projected to redraw the landscapes future both for paint on canvases as well education. With this study we contributed to bring into relief the contemporary panoramas of DAE, and at the same time opened research routes that are essential for a better comprehension on how educational institutions may deal with puzzles but also new environments in such domain. This confluence of digital and other art forms sometimes makes the current climate intimidating to navigate for artists and students — but by delving deep into multimedia arts, educators help prepare their students for this multifaceted world.

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