



**TECHNOLOGY IN THE ART CLASSROOM: DRAWBACKS AND BEST
PRACTICES FOR DIGITAL CREATIVITY**

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Abstract

This study looks into the impact of increased use of digital tools on immersive learning for digital art students, with an emphasis on creativity and originality. The study will use both quantitative (projects, surveys) and qualitative (observations, reflections) methods to better understand how digital tools affect students' creativity. Surveys and questionnaires were used to gather information about students' attitudes toward technology, perceptions of the creative process, and the impact of the classroom structure. Qualitative observations looked into student behavior and engagement in guided exploratory classes. The study also looks into the challenges that come with using technology and how they affect creativity and fear of failure. Regular check-ins and feedback sessions will help promote continuous improvement. The study was conducted at a high school in southern New Jersey, and focused on students enrolled in digital art classes taught by an experienced teacher. A specific group of students taking guided exploratory classes and using digital tools (Adobe Software) during the 2023-2024 school year provided valuable insights, informing recommendations for increasing students' confidence, reducing fear of failure, and fostering creativity in the digital art classroom.

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Chapter One: Introduction

Today's digital art environment has experienced a complex shift in the relationship between digital technology and visual art. The widespread use of smartphones and apps has made it harder to give students engaging learning experiences that help them grow and think more deeply. Even though technology has made it easier to be creative, it has also caused problems, like putting more emphasis on speed than on creativity and originality. To solve this problem, it is important to find a balance between teaching students technical skills and giving them chances to explore their creative potential.

To find a balance between the motivation to create original work and the technical steps needed to do so, it is important to teach students the technical skills and tools they need to make their creative visions come to life prior to introducing and exploring ideas for a new project. Along with this technical instruction, students should have opportunities to try new things and take risks without fear of failure. This will allow them to explore their creative potential and find new ways to express themselves, as well as build the confidence and skill to create an original work. Without a safe place for the exploration of new skills, teachers may experience that students' anxiety and fear rise, and this always impacts the creative process.

To address this balance of creativity, fear, and anxiety, a teacher needs to try to teach students how to be persistent and encourage them to explore their creative potential by giving them feedback and guiding them through the creative process. This feedback will focus not only on technical aspects but also on the creative process and the originality of their work. It's important to stress how essential it is to take the time to fully explore different creative paths instead of rushing to finish projects quickly.

The role of teacher training and professional development in integrating technology into the art curriculum was explored, revealing significant insights. The influence of these programs on educators' proficiency in utilizing technology to enrich the art classroom experience was studied. It became evident that comprehensive training programs and ongoing professional development initiatives bolstered educators' confidence in using technology and enhanced their pedagogical strategies. Moreover, specialized training led to a deeper understanding of how to leverage technology while maintaining traditional art principles. Tailored professional development initiatives were emphasized as essential for addressing the specific requirements of art educators, especially regarding technology integration. Ongoing support and mentorship were also highlighted as integral components for effective teacher training and professional development, providing collaborative opportunities for educators to enhance their ability to integrate technology into the art curriculum meaningfully.

These findings have implications for shaping future policies and practices in art education by emphasizing the need for holistic, targeted approaches to empower educators with expertise in effectively integrating technology into the art curriculum.

Theoretical Orientation

The study's goal is to investigate the effects of technology on students' creative process, originality, and engagement in a digital art classroom. With so many people using smartphones and apps, there has been a noticeable shift in how students perceive art. They now focus more on speed than on being creative and original. The study will delve into how this shift has affected students' creative processes and engagement.

The study will look at how students perceive their use of digital technology and various types of creative tools to build their own knowledge and understanding of making digital art. The

research of Tsortanidou et al.'s (2019) will serve as a foundation for investigating the impact of technology on students' creativity, originality, and engagement in the digital art classroom. The research by Tsortanidou et al., (2019) was informed by several learning theories, including constructionism and social-constructivism. These theories advocate for learning environments where students are actively involved in constructing their own understanding rather than passively receiving information. At its core, constructionism suggests that learners benefit from constructing their own knowledge through hands-on, creative processes and by making tangible objects in the real world—this can include digital artifacts in a modern, technology-enhanced learning environment. It is closely related to constructivism, but places more emphasis on the learner's ability to create something shareable as a part of the learning process (Tsortanidou et al.'s 2019).

This theory will enable the researcher to examine how students learn in a digital art class in greater detail, with a focus on the student's role as active participants in their own artistic development. These theories will help shape the study by allowing the researcher to consider how technology in the digital art classroom influences students' creative process and motivation. Tsortanidou, Daradoumis, and Barberà (2019) conducted research to integrate creativity, computational thinking, collaboration, and new media literacy skills in a low-tech, information-rich learning environment. Using similar constructivist theories as Tsortanidou et al., 2019, this new study will look into the impact of technology on students' creativity and engagement in the digital art classroom. Building on the constructivist approach, the new study will look into how students perceive and construct their knowledge and understanding of art through the use of digital technology and other creative tools. The new study will also investigate

the impact of teacher content knowledge on students' creative growth and learning outcomes in the digital art classroom, using theories similar to those of Tsortanidou et al., (2019)

Collaboration plays a pivotal role in the constructivist digital art classroom, fostering the exchange of ideas and perspectives. This collaborative environment not only enhances artistic skills but also promotes critical thinking and problem-solving abilities (Tsortanidou et al., 2019). Students analyze and interpret different artworks, providing feedback and suggestions to one another and engaging in discussions that stimulate creativity and innovation during the creative process. The integration of technology through a constructivist learning theory lens opens avenues for students to explore diverse digital tools and styles. The article "Connecting moments of creativity, computational thinking, collaboration, and new media literacy skills" by Tsortanidou, Daradoumis, and Barberà underscores how specialized experiences such as lectures, studio work, museum visits, and art discussions contribute to contextualizing students' learning processes. Students gain visual literacy, communication skills, and a deeper understanding of contemporary art and its relationship to the past as a result of these immersive experiences. This article also supports teaching computational thinking, teamwork, and how to use new media in art classes, which is in line with constructivism (Tsortanidou et al., 2019). Students can express their artistic ideas and solve creative problems by actively interacting with technology and media tools. Art teachers, for example, can instruct students on how to use digital tools and software to create digital art projects, fostering critical thinking and problem-solving abilities while cultivating aesthetic sensibilities.

Additionally, this new study will seek to expand on the findings of Tsortanidou et al., (2019) by specifically examining students' perceptions of how the use of technology impacts students' artistic approaches, focusing on whether the shift towards prioritizing creativity and

originality over speed and technology improves the creative process. By delving deeper into these issues, the new study hopes to provide additional insights into the evolving relationship between technology and art, contributing to a more comprehensive understanding of its impact on students' perspectives of their creative development and engagement. The study will examine how different types of digital tools, such as Adobe software, impact students' engagement and learning experiences in digital art classes. The study's theoretical framework will center on the idea that the use of digital tools shapes students' creative exploration and problem-solving abilities, thereby contributing to a more comprehensive understanding of technology's role in art education. The study will look at the importance of teacher content knowledge, training, and professional development in successfully integrating technology into the art curriculum. Drawing on social constructivism theory, the study will emphasize the importance of educators' ability to facilitate meaningful interactions between students and technology, ultimately influencing students' creativity, originality, and engagement in the digital art classroom. By examining all of these factors within the context of constructivist theory, the study hopes to provide useful information about how digital technology and art education influenced the creative process, as well as potential solutions to the problems that arise when technology is emphasized in the creative learning process principles and guidelines for teaching practice.

For future research, this research could serve as a reference point for studies exploring the impact of technology on student creativity and engagement in digital art classrooms. It offers insights into the balance of conceptual thinking and creativity and suggests methods to foster a rich learning environment that can be adapted to the investigation of technological impacts in various educational contexts.

Problem Statement

Technology helps some students stay motivated, but it can also lead to hasty, copycat work that sacrifices quality. Technology can also make students less focused and less likely to finish original and thoughtful work, which affects their development. The challenge for educators is to teach students how to use digital tools in ways that foster a strong creative process that embraces thoughtful, original work and personal growth. Without well-planned lessons, students may struggle to fully explore their ideas and concepts, affecting their artistic development (Bereczki & Kárpáti, 2021). The research focuses on the drawbacks of technology in the art classroom as well as best practices for assisting students in using digital tools to improve the creative process, originality, and personal growth. Art educators can use this research to balance technology and creativity and promote a holistic approach to art education that benefits students' development (Bereczki & Kárpáti, 2021).

Because software and technology are growing and changing so quickly, it is important to talk about how technology affects students' creativity, originality, and engagement in digital art classes often. It is also unclear, however, how digital tools like Adobe software affect art students' engagement and learning. Because of a lack of research, a study on how technology affects the creative process in digital art classrooms is needed. This research seeks to better understand how digital tools influence students' creative development and learning experiences, as well as how teacher training and content knowledge are used to effectively integrate technology into the art curriculum. Using cognitive and constructivist learning theories, this study will explore how technology influences students' creativity, originality, and engagement in art education. In addition, the study suggests how digital art teachers can guide students in using digital tools to improve their creative process and create thoughtful and original work. Because

of the widespread use of digital tools and technology, students struggle to strike a balance between technical skills and creative exploration. Because technology has the potential to harm students' creative development, the literature emphasizes the importance of incorporating digital tools to boost creativity and promote holistic learning (Hashimi et al., 2019).

To deal with these problems, the main objectives of this capstone study are to carefully look at the theoretical foundations of the study, combining cognitive and constructivist learning theories to put the effect of technology on students' creativity, originality, and participation in the digital art classroom into context. By doing so, the study aims to contribute valuable insights to the existing body of literature by providing practical recommendations for digital art teachers to effectively integrate technology and guided practice into their curriculum. The study also aims to find ways to encourage students to use digital tools in a way that fosters creativity, encourages them to create original, well-thought-out work, and helps them grow as students and individuals in general.

Significance or Purpose

The research study seeks to identify the problem statement by using a comprehensive approach. The study uses both quantitative and qualitative methods, surveys, projects, and observations and reflections, to get a full picture of how digital tools affect art students' perceptions of creativity and originality. The surveys and questionnaires will provide information about how students are feeling about using technology, how they perceive their creative process, and how they feel the guidance and structure of the classroom impact their creative process. In contrast to projects and reflections, qualitative observations will allow the researcher to learn more about how students perceive, their behavior, and how engaged they are in guided exploratory classes. A big part of the research is also looking for problems that might

arise when technology is used in the classroom and how the students perceive and respond to these problems. The researcher is particularly interested in how these challenges may affect students' ability to be confident, creative, and original while also developing them into stronger 21st century learners.

The study will take place in digital art classes at a high school in southern New Jersey. The population for this research study will consist of students enrolled in the digital art classes. The course is guided by a teacher with strong content knowledge from real-world experience as a graphic designer using the Adobe Suite of Programs and 20+ years of experience teaching digital art. A group of 41 students who were registered in digital art classes during the 2023–2024 school year will voluntarily take part in an action research study in March and April 2024. These students will be involved with the guided exploratory classes, digital tools, and other parts of the research plan. This will give us useful information about how digital tools affect creativity and originality from the students point of view. This specific group of people lets us look closely at the results of using Adobe software and similar technologies in a high school digital art program for educational purposes.

This study seeks to provide insights into how digital tools affect creativity and originality in art classes, going beyond simple usage statistics to look into the qualitative, subtle differences in how technology influences student perspectives of the artistic process. This will help art teachers identify and discuss the issues that arise when technology is used in the classroom, as well as suggest ways to improve digital tools to increase creativity and reduce students' fear of failure. During the research, the teacher will conduct regular check-ins and feedback sessions to ensure that the concepts being studied increase students' confidence and reduce their fear of failure. Using well-structured technologies, such as Adobe software, and an application-focused

approach provides a useful framework for art teachers who want to incorporate digital tools into their classrooms.

This research study significantly strengthens professional practice in art education by offering tangible insights and practical strategies that educators can readily apply in their classrooms. Regular check-ins and feedback sessions, combined with a structured schedule for analysis and improvement, promote an iterative and responsive teaching style, allowing instructors to adapt and refine their strategies in real time. The research's emphasis on fostering student confidence and reducing fear of failure contributes to a positive learning environment, allowing educators to encourage creativity and risk-taking in their students. The combination of quantitative and qualitative research methods provides a comprehensive understanding of the impact of digital tools, enabling educators to use statistical data and qualitative narratives to make informed decisions in their teaching contexts. By looking at the big picture, this research study helps connect theory and practice by giving useful advice and strategies based on evidence that directly support and improve art teachers' professional work.

This research study is relevant to our school/district, particularly in the context of digital art education. This study may improve student and teacher academic, social, and behavioral outcomes. Academically, the study will focus on increasing creativity and originality in art classes by strategically utilizing digital technologies. Socially, the emphasis on reducing students' fear of failure and cultivating a positive learning environment is especially important. Understanding how technology influences artistic expression allows educators in our school/district to tailor their instructional approaches, fostering a more innovative and engaging learning environment. The research findings could contribute to the creation of a more supportive classroom atmosphere where students feel more confident to collaborate, share ideas,

and engage in artistic experimentation. This social cohesion may lead to a more inclusive and collaborative community within our school's art program. These factors, when combined, could lead to improved academic performance as students use digital tools to better explore and express their creativity.

The integration of well-structured technologies, such as Adobe software, provides practical examples that can be directly applied in our school/district. This hands-on approach aligns with contemporary educational practices, ensuring that students are equipped with relevant skills for the digital age by building 21st century skills. Hashimi et al. (2019) show that a classroom environment that actively encourages risk-taking and creative exploration is likely to result in students who are more engaged, motivated, and proactive in their artistic pursuits. This positive shift may extend beyond the art classroom, influencing a more positive and proactive attitude towards learning in general (Gadsden 2008).

The research findings may be widely shared with the broader community through various channels. Presentations at professional conferences and workshops will engage educators, administrators, and researchers, fostering discussions on the integration of digital tools in art education. Publication in reputable educational journals will ensure accessibility to a diverse audience, including policymakers and practitioners.

Research Questions

- In what ways does the use of technology influence students' creative process, originality, and engagement in the context of a digital art classroom?
- How do different types of digital tools (e.g., Adobe software) affect students' engagement and learning experiences in art classes?

- What role do teachers content knowledge and professional development play in enhancing educators' ability to effectively integrate technology into the art curriculum?

Definition of terms

In this study, I will use the term "digital tools" to describe the computers and software programs required to create and improve visual art. In art education, "creativity" refers to the generation of new ideas and expressions, as well as divergent thinking and innovative problem-solving. The term "originality" refers to the quality of being distinctive and inventive in artistic expression, as opposed to mere imitation or replication. "Guided exploratory classes" are structured instructional sessions that encourage students to experiment with digital tools while being guided by the instructor. "Fear of failure" refers to the emotional apprehension that prevents creative expression because of concerns about making mistakes or producing unsatisfactory results.

Chapter Two: Literature Review

The intersection of technology and art education has become an increasingly important and relevant topic in recent years. As digital technologies continue to advance and become more integrated into our daily lives, educators and researchers have started exploring the potential pros and cons of incorporating technology into art education. This literature review aims to address the potential drawbacks of using technology in a digital art classroom, its impact on the creative process, and the best practices that help students use digital tools to improve their creativity, originality, and personal growth.

Problems of Practice

In today's digital age, incorporating technology into art education has become increasingly common. While technology can provide numerous opportunities for creativity, it also presents some challenges. One challenge is that technology can enable hasty and imitative work, prioritizing speed over quality. This can hinder students' creativity, as they may produce derivative and uninspired pieces of art. As a result, students may struggle to fully explore their ideas and concepts, impacting the development of their artistic skills (Bereczki & Kárpáti, 2021). The review aims to address the potential drawbacks of using technology in the art classroom and the best practices that help students use digital tools to improve their creativity, originality, and personal growth. This review can help art educators balance technology and creativity and promote a more holistic approach to art education that benefits students' overall development (Bereczki & Kárpáti, 2021)

Fostering Creativity Through Reflection

Encouraging students to reflect and think critically can foster their unique creative voices. Additionally, fostering collaboration and peer critique can enhance creativity and artistic skill

development by encouraging the sharing of ideas and constructive feedback (Patton & Buffington, 2016). Art teachers need to find a balance between traditional methods of teaching art and incorporating digital tools. Technology is important, but the creative process should be prioritized. A balance lets students experiment with new mediums and methods, expanding their creativity (Zhu, 2020). Be open to experiment: Students can be creative and artistic by taking risks and trying new methods (Zhu, 2020). Teaching mindfulness and focusing can help students immerse themselves in their art in a distracting digital world (Tsortanidou et al., 2019). With the multitude of distractions available on digital devices, students may find it challenging to stay engaged in their artistic process (Wilks et al., 2012). By teaching these strategies, educators can help students use technology for creative expression rather than quick production.

Numerous researchers have studied the use of technology to foster creativity in art education, including Bolden et al., (2019), Bereczki & Kárpáti (2021), and Zhu (2020). According to Bolden et al. (2019), technology has the potential to make self-reflection and artistic expression easier, but they warn that it should not be used to copy others' work, which could hurt originality. Bereczki and Kárpáti's (2019) study examined how experienced teachers use technology to foster creativity in secondary school subjects, including visual arts. The findings resulted in six major ways through which the teachers believed technology could enhance creativity. They were Igniting creativity, Creating digital products, Scaffolding creative thinking, Augmenting creative collaboration, and Evaluating creative outcomes. In visual arts education, for instance, teachers suggested that technology could support creativity by offering students a platform to explore and share artistic ideas and try out new techniques (Bereczki & Kárpáti, 2021). Zhu (2020) calls for a balanced approach and says that traditional and digital ways of teaching should be used together. This lets students try new things, which encourages

creativity while also teaching them to be mindful and focused when they use technology. Using a balanced approach that includes both traditional and digital ways of teaching can give students the freedom to explore their creativity while also helping them learn important skills like focus and mindfulness.

Excessive dependency and lack of focus

One of the primary concerns is an excessive dependence on technology, which may result in a decline in traditional artistic abilities and a diminished comprehension of the creative process and craftsmanship (Bereczki & Kárpáti, 2021). There is a risk of reliance on technology as a crutch rather than fostering students' critical thinking and problem-solving skills (Zhu, 2020). The use of technology may also contribute to a disconnect between the student and the physical art-making process. When students rely too heavily on digital tools, they may neglect to develop their manual skills during the creative process, which are essential in traditional art mediums and also help to encourage students to create a style and look at their work (Bereczki & Kárpáti, 2021).

The Learning Curve

Another concern raised would be a learning curve for both teachers and students in adapting to new technologies and software (Black, 2014). Incorporating cutting-edge technology successfully requires a teacher to have a full understanding of why and how the technology works within the identified learning and teaching context. However, from my experience, most school districts have inadequate resources, professional development, and technical support, which will also hinder the effective use of technology in specialized areas like digital art classrooms. The lack of adequate resources and technical support can hinder the successful integration of technology in art education (Bereczki & Kárpáti, 2021). Patton and Buffington

(2016) advocate for the integration of digital technologies in art education in order to keep up with the evolving needs and skills of students in the digital age. They discuss the challenges, such as the need for teacher training, technological infrastructure, and financial resources for adopting digital technology (Patton & Buffington, 2016). Styker found that the introduction of digital technologies in the art classroom requires teachers to question old assumptions and develop new frames of reference. Teachers need to explore how creativity in digital environments compares to traditional art materials (Strycker, 2020). Teachers may struggle with limited access to technology and a lack of proper training or professional development opportunities (Kupaysinovna, 2021).

The introduction of technology in the art curriculum can also pose challenges in terms of time and the crowded curriculum. For instance, I am having trouble in my district right now because of the new rule that there must be four summative tests during the marking period. Students do not have as much time to be creative because of this. There are only 32 classes in a marking period, and each project can take up to nine to eleven classes. This makes it hard for students to be creative while also meeting school-mandated goals that do not really fit in a project-based creative setting. Art teachers often have limited time to cover all the essential skills and concepts within their curriculum, and the integration of technology adds an additional layer of complexity (Saeed & Ramdane, 2022). The demanding nature of introducing and updating teachers and students to new technologies can divert attention and resources away from other important aspects of the process of creating art. Additionally, the overcrowded curriculum poses a challenge, as art teachers already have substantial time demands placed upon them. With the incorporation of technology, teachers may feel overwhelmed by the multitude of choices available for artmaking, further exacerbating the time constraints. To avoid overburdening the

curriculum with too much technology, art teachers can take Zhu's approach of balancing traditional and digital teaching methods (Zhu, 2020). This entails incorporating technology strategically and purposefully, with a focus on its potential to enhance students' artistic expression and creativity.

Addressing Drawbacks of Technology in the Art Classroom

The integration of technology into the art curriculum has brought about significant changes and challenges for art teachers across the globe. As the educational landscape continues to evolve, educators are increasingly seeking ways to infuse creativity and innovation into their teaching methods. The convergence of technology, creativity, and art education has sparked a growing interest in re-conceptualizing the role of multimedia and digital tools in the classroom. However, this shift has not been without its challenges, particularly in the art classroom.

Using technology in art classes comes with a number of issues and challenges that art teachers need to deal with. Along with the need to come up with new ways to teach ever-evolving technology, these problems include not having enough time or resources and not having enough technical support. Art teachers frequently express concerns about having to learn new teaching techniques when they use technology in the classroom. For example, they might need to learn how to use new software, how to include technology in their lessons, and how to teach students how to use digital tools to make art. Joanna Black's research (Black, 2014) suggests that when students learn to create and express their ideas with new software, it enhances their patience and appreciation for the subtle and larger changes that can be achieved through graphic effects tools. This highlights the importance of teaching students to look at problems in new ways and utilize technology as a tool for creativity and self-expression.

The Why And How

One important aspect to consider when addressing the integration of technology into art education for enhanced creativity is the need for teachers to understand why and how technology works in the context of learning and teaching (Condruz-Băcescu, 2019). This understanding will help educators effectively incorporate cutting-edge technology into their teaching practices, ensuring that it complements and enhances their traditional philosophy and pedagogy. By exploring the literature on technology integration in art education, teachers can gain insights into the best practices and strategies for incorporating technology into their classrooms (Strycker, 2020). Art educators face the challenge of not only implementing and integrating new technological tools but also of understanding the potential benefits and pitfalls associated with this integration. The emergence of various digital platforms and tools has expanded the role of art education beyond conventional methods, offering both opportunities and challenges. Educators must navigate through the complexity of technological advancements while maintaining their traditional pedagogical values (Patton & Buffington, 2016).

In order to address these challenges, art teachers are in a constant process of learning and adapting. The role of continuous professional development becomes crucial as teachers need to stay updated with the latest tools, software, and platforms (Condruz-Băcescu, 2019).

Learning Environments

Research has shown the importance of creating a supportive and interactive learning environment that fosters creativity. Teachers can learn from studies like Bereczki and Kárpáti's research, which examined how experienced teachers use technology to nurture creativity in various high school subjects, including visual arts. This study provides valuable insights into the strategies and approaches that expert teachers employ to foster creativity through technology

integration (Bereczki & Kárpáti, 2021). By incorporating findings from this study into my research, I can identify specific technology-based practices that have been successful in promoting creativity in art education. For example, these strategies include igniting students' creativity, supporting idea development, creating digital products, scaffolding creative processes, augmenting collaboration among students, and facilitating evaluation of creative outcomes (Bereczki & Kárpáti, 2021). These methods have been shown to work in a variety of secondary school subjects, and it is important to think about both subject-specific and general technology-based practices when putting creativity-boosting lessons into regular school timetables (Bereczki & Kárpáti, 2021). It also encourages teachers of common content to collaborate among art teachers and create a supportive community where they can share their experiences, ideas, and best practices for integrating technology.

Art teachers may incorporate strategies to help students stay focused while using technology in the art classroom. One approach is to establish clear guidelines and expectations for technology use during art lessons (Kupaysinovna, 2021). For instance, in the Finnish education system, the National Education Council developed a curriculum for education that gives guidelines for teaching subjects. This includes fine arts classes where competencies in solving general and future problems are developed (Kupaysinovna, 2021). Examples of how this could be used in a digital classroom would be setting specific time limits for using digital tools and providing structured tasks or assignments to keep students on task.

Stringent rules, on the other hand, can stop students from being creative and exploring. Several of the studies this article looked at hinted at this, but they did not say for sure that strict rules were to blame. An example is given in Bereczki and Kárpáti's 2019 paper of four teachers who noted that freedom and choice are important characteristics of a creative environment but

instead implemented more teacher-centered methodologies. Using these kinds of teacher-centered methods could be seen as following stricter rules and limiting what students can discover. These stricter methods seemed to cut down on the time students had to come up with ideas and work at their own pace. This may have had an indirect effect on limiting student exploration and creativity. In Stykers 2020, it talks about how important it is to use technology to help students develop higher-order thinking skills and be creative. This suggests that an approach that is only prescriptive or restrictive might not fully utilize the benefits of technology in art education. Black's research from 2014 does look at how power works between teachers and students in both traditional and tech-enhanced classrooms. The findings show shifts in traditional teaching methods, including a shift toward a learner-centered model in some cases (Black, 2014). Students may have more freedom to experiment and be creative with these models. This implies that strict rules may actually limit freedom. Rules and expectations about how to use technology in art class can help keep things in order and help students focus, but they need to be carefully weighed against the need for students to be free and explore. The research in this article shows that strict rules can hinder creativity and stop students from exploring. Teachers should strive to create a creative environment in which students can develop their ideas and work at their own pace. Educators can fully realize the potential benefits of digital tools in art education by promoting creativity and facilitating higher-order thinking skills.

Finding Balance

There are numerous resources available to teachers for finding balance. Zhu (2020) stresses the importance of a balanced approach that uses both traditional and digital ways of teaching. This approach ensures that technology is used as a tool to expand creative possibilities rather than as a mere substitute for traditional art materials and techniques. Zhu's (2020) method

for keeping the curriculum balanced can be used to carefully consider how to use technology in the art classroom. By considering technology as a tool instead of a replacement for traditional art supplies and methods, teachers can keep the curriculum well-rounded and complete. Art teachers who want their students to be able to play around with technology should let their students use digital tools in ways that fit with how they see art. This can help them feel like they own and are in charge of their creative process while still keeping them focused. Another disadvantage of using technology is the risk of distraction and lack of focus. With so many distractions available on digital devices, students may find it difficult to stay engaged in their artistic process (Gadsden, 2008).

Although research suggests that technology has an impact on creativity, in some cases, it can reduce the stress of producing traditional digital art. In my digital art lab, many students every year choose digital art over traditional art because they are "not creative" or "not artistic." Borg's research suggests that using digital tools like Doodlecast for art-making can help decrease a child's fear of failure. A preschool child in the study said that painting digitally on an iPad was "easier and more fun" than using crayons on paper. This is because digital drawing and painting can be seen as a "safer" environment (Borg, 2000). This suggests that digital media may be seen as less dangerous or permanent than traditional media, which could make kids less afraid of messing up. The app's eraser tool, which allows users to easily correct, reveal, remove, or create shapes, may also help to reduce fear of failure (Borg, 2000).

Collaboration and Community

Incorporating collaborative projects and group discussions into the art classroom can also help mitigate distractions and promote engagement. By encouraging students to work together and share their ideas and experiences with technology, art teachers can create a collaborative and

supportive learning environment. This collaborative approach aligns with the findings of Condruz-Bacescu (2019), who suggests that digital art activities can be enjoyable for students who may not be interested in traditional art activities. Engaging students in collaborative projects not only fosters collaboration and teamwork but also allows for the sharing of knowledge and skills related to digital art (Condruz-Băcescu, 2019). The use of the internet and information and communication technologies, as well as the inclusion of technology and tools in visual arts courses, can significantly improve art education, according to a study by Wilks, Cutcher, and Wilks titled "Digital Technology in Visual Arts Classrooms."

Time and Resources

The limited time that can be spent exploring digital art and studying artists who use digital tools in their work (Strycker, 2020) Another problem is that art teachers may not have enough time or space to fully incorporate technology into their lessons because of their busy schedules and curriculum. A lack of resources and technical support can also make it hard to use technology effectively in art education (Leahy et al., 2019). It can be hard for art teachers to give all of their students the same and fair learning experience when they do not have access to the newest technology and materials. To deal with these problems, art teachers need to push for more professional development opportunities and tools that help them use technology in art classes (Leahy et al., 2019). They can learn more about digital tools and come up with new ways to teach by working together with other teachers and going to workshops and conferences. Art teachers should also have enough time and resources to explore and try out new technology in their classrooms, and school districts and schools should support this. This will help them get used to using digital tools in the classroom and give their students more meaningful and interesting art experiences.

Theoretical Framework

I will use constructivist learning theory as the theoretical framework to guide my research into how technology can be used to boost creativity in art education. Zhu and Tomljenovi have both dug into this framework, providing valuable insights that can help me pursue my goal of finding a harmonious balance between creativity and technology in the art classroom. Within the constructivist learning theory, teachers are seen as guides who help students explore and find out things while also recognizing that each student is unique and has a different way of thinking (Tomljenović & Vorkapić, 2020). This personalized approach improves learning and information sharing in visual arts classes by creating a space that combines technology and creativity (Zhu, 2020). By broadening the constructivist approach to technology integration in art education, I hope to create environments that actively engage students in hands-on exploration and social interaction. This approach allows students to take ownership of their learning, experiment with different techniques, and develop their own artistic voice (Tsortanidou et al., 2019).

With its focus on students actively building their own knowledge through hands-on experiences and social interactions, the constructivist learning theory fits perfectly with the all-around approach I want to promote in art education. Zhu's research, for example, shows that when used with the right tools, technology can help students collaborate in art classes (Zhu, 2020). Before adding technology to art classes, it is important to know what role it plays in learning and teaching in general. This understanding can be developed through professional development, collaboration with technology integration specialists, and ongoing research into best practices.

A constructivist learning theory in the digital art classroom means giving students chances to try out different digital tools and software. Teachers act as facilitators, guiding

students through the process of discovery and learning rather than lecturing about digital illustration techniques (Tomljenovi & Vorkapi, 2020). This active learning approach allows students to gain a deeper understanding of the medium while also cultivating their individual artistic styles. When incorporating technology into art classrooms, it is critical to consider the diverse needs and interests of students. Tomljenovi emphasizes the role of technology in fostering creative intent and facilitating artistic processes. Students can explore, experiment, and express their ideas through the guided use of technology as a tool, developing not only artistic skills but also critical thinking, problem-solving, and communication skills (Tomljenovi & Vorkapi, 2020). Art teachers can ensure that all students, regardless of their level of comfort with technology, can use it effectively to enhance their creativity by providing differentiated instruction and resources.

Collaboration plays a pivotal role in the constructivist digital art classroom, fostering the exchange of ideas and perspectives. This collaborative environment not only enhances artistic skills but also promotes critical thinking and problem-solving abilities (Tsortanidou et al., 2019). Students analyze and interpret different artworks, providing feedback and suggestions to one another and engaging in discussions that stimulate creativity and innovation. The integration of technology through a constructivist learning theory lens opens avenues for students to explore diverse artistic mediums and styles. The article "Connecting moments of creativity, computational thinking, collaboration, and new media literacy skills" by Tsortanidou, Daradoumis, and Barberà underscores how specialized experiences such as lectures, studio work, museum visits, and art discussions contribute to contextualizing students' learning processes. Students gain visual literacy, communication skills, and a deeper understanding of contemporary art and its relationship to the past as a result of these immersive experiences. This article also

supports teaching computational thinking, teamwork, and how to use new media in art classes, which is in line with constructivism (Tsortanidou et al., 2019). Students can express their artistic ideas and solve creative problems by actively interacting with technology and media tools. Art teachers, for example, can instruct students on how to use digital tools and software to create multimedia art projects, fostering critical thinking and problem-solving abilities while cultivating aesthetic sensibilities.

Conclusion

Both Wilks et al. (2012) and Tsortanidou et al. (2019) studies demonstrate the complexities of the relationship between technology and art education. Wilks et al. (2012) show the advantages and disadvantages of using digital tools in art classrooms and highlight the capability for quicker manipulation and storage of works and the potential for creative problem-solving as advantages. The main problem, according to Wilks et al. (2012), is the possibility that technology will stifle rather than foster creativity. With its focus on personalized learning, active student participation, and working together, the constructivist learning theory stands out as a way to deal with these issues.

When people depend too much on technology, it hurts the growth of a strong creative process and critical thinking. Research shows that art teachers can use a constructivist approach to turn technology into a tool that helps creativity rather than stifles it. Zhu says that using a mix of traditional and digital teaching methods gives students a more complete picture that lets them try out new media without falling into the trap of copying others' work.

Adopting new technologies can be hard because they require a lot of learning, and there are not enough resources or technical support to make things easier. The literature suggests taking a proactive stance, advocating for professional development opportunities, collaboration

among educators, and strategic integration of technology to ensure a meaningful impact on students' creative development. The importance of understanding why and how technology works in the context of learning and teaching, as well as the need for continuous exploration and adaptation.

The literature also emphasizes the importance of creating supportive and interactive learning environments. According to academics like Tomljenovi's research, technology can help with group projects and hands-on exploration. Setting clear guidelines for technology use and encouraging a balance of freedom and structure can all contribute to a creative environment that encourages both artistic expression and technological proficiency.

This review identifies issues with using technology in art classes and offers helpful suggestions and plans for resolving these issues. The constructivist learning theory appears to be the most important aspect in the digital art classroom. It promotes a student-centered, collaborative, and technology-enhanced approach to encouraging creativity. By adhering to these guidelines, teachers can find a way to integrate technology and art in a way that allows students to discover their own creative voices while also preparing them for the changing needs of the digital age. Using a constructivist learning theory can help design research to gauge the effectiveness of the integration of technology in the art classroom. By conducting surveys, interviews, and observations to gather valuable insights into students' experiences with technology and its impact on their creative development. Additionally, it will allow the assessment of their level of student engagement, satisfaction, and perceived learning outcomes related to the use of digital tools and software in art education.

Chapter Three: Methodology

These days, technology is an important part of art classes because it changes how students make art and interact with it. The purpose of this study is to investigate the benefits and drawbacks of incorporating technology into the art classroom, with a particular emphasis on the creative process. By looking at the pros and cons of technology, teachers and students can find their way through this changing world and make sure that students have a meaningful and useful learning experience. This investigation provided ideas and suggestions for how to use technology in the art classroom to boost creativity and artistic expression. Our main objective is to learn about the various impacts of using computers in art classes. Making students more confident in their technical skills can reduce their fear of failure, allowing them to take risks with their work and generate more original ideas. Because of the changes in education, the researcher looked into how using digital tools in a digital art classroom affects students' building of artistic skills, creativity, and originality. These tools include Adobe software and others (Hashimi et al., 2019).

The researcher wants to answer these three questions with this action research:

- In what ways does the use of technology influence students' creative process, originality, and engagement in the context of a digital art classroom?
- How do different types of digital tools (e.g., Adobe software) affect students' engagement and learning experiences in art classes?
- What role do teacher content knowledge and professional development play in enhancing educators' ability to effectively integrate technology into the art curriculum?

The goal is to find out how students feel about art and technology by creating a questionnaire and three well-planned activities where they can use various digital tools to complete a project. During the lessons, observations were made about the problems and issues

that might come up when technology is used in the classroom and ways for teachers to deal with and lessen these problems.

The researcher used "guided exploration," which lets students try out various art styles, themes, and digital tools in a planned but adaptable way. Throughout the lessons, students' work was turned in for check-in. This allowed the teacher to make any necessary changes before the final grade was given. When you set up the class with more structured exploration time, students can experiment with different pieces, techniques, and/or tools. This gave students time to try new things, think outside the box, and build confidence while still letting them make art within the limits of their assignment.

The guided exploration approach was implemented through a structured format that allowed students to experiment with various art styles, themes, and digital tools (Bereczki & Kárpáti, 2021). The researcher evaluated the effectiveness of this approach by collecting students' reflections at the end of each of the three lessons. By reviewing the students' feedback, the teacher was able to better understand the students' perceptions of the creative process and make any necessary adjustments for future assignments (Bereczki & Kárpáti, 2021). This process allowed for adaptive teaching methods and ensured that students had the opportunity to explore different techniques and tools before completing the requirements of the final assignment. Overall, the structured exploration time provided students with the freedom to think creatively and push the boundaries of digital art while staying within the framework of their project.

Guided Practice

Guided practice includes the following series of events:

Introduction and Demonstration

1. Guided Practice

2. Check-in
3. Continued Guidance and Support
4. Encouraging Exploration and Risk-Taking
5. Final Review and Reflection

At the beginning of the project, the teacher will provide students with samples of well-composed artworks that use the skills and techniques the project will address. The teacher demonstrates basic techniques and tools relevant to the day's lesson. Following the demonstration, there will be some time for the students to put the skills they learned into practice or, if possible, see more examples and/or additional demonstrations. Students will then start working on their projects while teachers circulate around the room, offering guidance and assistance to individual students as needed. Encouraging them to ask questions and offer suggestions for refining their compositions. About halfway through the lesson and while circulating the room, the teacher conducts a check-in with each student to review their progress and understanding. Ask them to explain their ideas and concepts for their compositions and provide feedback to ensure they're on the right track. Offer constructive criticism and suggestions for improvement, focusing on guiding them towards achieving their artistic vision rather than simply correcting mistakes. As the students continue working on their compositions, the teacher remains available to provide ongoing guidance and support. Encouraging students to experiment with different techniques and explore creative solutions to any challenges they encounter. The teacher emphasizes that it's okay to make mistakes and encourages students to take risks and try new things in their projects. Fostering a supportive classroom environment where students feel comfortable expressing their creativity and pushing the boundaries of their skills. At the end of the lesson, students are given an opportunity to share their work with the class and discuss their

creative process. Students are encouraged to reflect on what they learned and any insights they gained from the experience. Provide positive feedback and praise their efforts, regardless of the final outcome of their project.

By incorporating regular check-ins, providing individualized guidance, and fostering a supportive learning environment, this approach can help students feel more confident and empowered to explore their creativity with Adobe programs.

Projects Breakdown

Project One in the digital art class begins with an introduction where students are given samples of exemplary work, clear directions, and demonstrations of relevant tools in Photoshop. Once equipped with the necessary knowledge, students embark on their projects. Throughout the session, the teacher actively engages with each student, circulating around the room to provide personalized guidance, address questions, and spark creative ideas. To ensure everyone stays on track and feels supported, a midpoint check-in is implemented. This checkpoint allows students to review their progress, receive feedback, and confirm that their ideas align with the project's objectives, thereby reducing apprehension about making mistakes. By fostering a collaborative and supportive environment, students are encouraged to explore their creativity while feeling confident in their abilities.

For Project Two, students receive the same foundational information provided in the first lesson. However, this time, additional options for exploration are introduced before commencing the project. Students engage in in-class skill demonstrations and tutorials to deepen their understanding of the tools and techniques in Photoshop. As a way to reinforce learning and check for understanding, students undertake a mini-project utilizing the newly acquired skills. This mini-project serves as a preparatory step for the final project, allowing students to

demonstrate their proficiency and ensuring that they are well-equipped to tackle the upcoming challenge. Through hands-on practice and targeted instruction, students gain confidence in their abilities and are better prepared to apply their skills creatively in their projects.

For Project Three, students build upon the foundational knowledge and additional exploration options introduced in the previous lessons. Before diving into the main project, students engage in three in-class practice assignments designed to further develop their skills within the software. These assignments provide hands-on experience and reinforce key concepts learned throughout the course. As a checkpoint to ensure comprehension, students undertake a mini-project using the tools and techniques covered in the practice assignments. This mini-project serves as both a demonstration of understanding and an opportunity for students to showcase their creativity. To deepen their understanding and provide inspiration, students participate in a deep dive into samples, which include both student-created and real-world examples. Additionally, a deconstruction of a file and a high-speed video of a project being created offer insights into the creative process and workflow in Photoshop. To ensure mastery of the material, students are given multiple-choice reviews at the end of class, allowing them to assess their understanding of key concepts and techniques. By incorporating varied learning experiences, practical exercises, and opportunities for reflection, the final lesson empowers students to apply their newfound skills confidently and creatively in their digital art projects.

Conceptual Framework: Action Research

This study takes a mixed methods approach, combining insights from constructivism with methodologies such as pragmatism. This approach incorporates qualitative inquiry and other research methods to provide a comprehensive understanding of how technology can improve the creative process in digital art education. It also provides a good understanding of how technology

is used in the classroom. Zhu and Tomljenović's (2020) previous research provided valuable insights on how to balance creativity and technology in art classrooms. The goal of this study is to find out how using digital tools in the art classroom can change how students learn art and how creative and original they are. Within the constructivist framework, teachers are seen as guides who help students explore and have unique learning experiences. This personalized approach not only improves information sharing but also creates an environment that seamlessly integrates technology and creativity. Expanding the constructivist approach to technology integration in art education allows for the creation of environments that actively engage students in hands-on exploration and social interaction while also empowering them to take ownership of their learning experiences.

The constructivist framework served as a foundation for understanding the role of technology in encouraging creativity and artistic expression in the art classroom. This method helped us look into the pros and cons of incorporating technology, which led to suggestions and ideas for making art education more digitally creative. In line with previous research on technology integration in education, this study sought to identify factors to consider when incorporating digital tools into the art classroom as well as propose a conceptual framework for developing effective technology-integrated art curriculum models. The factor this research will focus on is students' perceptions and how those perceptions can impact the creative process.

Using a methodological approach to investigate how technology can enhance the creative process in digital art education within a constructivist theoretical framework. Zhu and Tomljenović's (2020) research provides valuable insights into balancing creativity and technology in art classrooms, laying the groundwork for this study's exploration of the transformative potential of digital tools in the art classroom. The constructivist framework views

teachers as facilitators guiding students through unique learning experiences, allowing time to examine how the integration of digital tools can reshape students' learning of art and enhance their creativity and originality. By adopting a personalized approach to education where students actively explore and engage with technology under the guidance of teachers, the study seeks to seamlessly integrate technology and creativity in the art curriculum.

Through qualitative research methods such as interviews, observations, and student reflections, this study aims to capture nuanced insights into students' perceptions and experiences with technology in the art classroom. Participant volunteers will encompass a diverse range of students from various grade levels, ensuring representation of different perspectives and experiences. Thematic analysis will be employed to identify recurring patterns and themes in the qualitative data, enabling a comprehensive understanding of how technology influences the creative process and learning in the art classroom. The iterative nature of action research will be embraced, allowing for continuous reflection and adaptation based on emerging findings and insights. Moreover, a collaborative approach will be fostered, encouraging the active participation of students and teachers in the research process to ensure that diverse voices and experiences are incorporated. Ethical principles, including informed consent, confidentiality, and respect for participants' autonomy, will be upheld throughout the research process, ensuring ethical practice in data collection, analysis, and reporting.

Participants

The research focused on 19 high school-age students' participation in high school digital art courses. This study included high school students from various backgrounds and educational settings. The demographic information included 15-18 year-old high school students, both male and female. The researcher conducting this study is an experienced art educator who has worked

with technology in the classroom for over 20 years. The researcher created a comprehensive series of surveys (see Appendix A-G) to address the three research questions and collected data by distributing a questionnaire to high school-aged students enrolled in digital art classes. The questionnaire aimed to assess their perceptions toward art and technology, as well as their experiences with different digital tools in the classroom. Additionally, three well-structured projects and activities were designed for participants to use various digital tools to create artwork. During these projects, observations were made to identify any challenges or issues arising from the use of technology, and strategies were developed to mitigate these concerns.

Procedures

This study employed a mixed-methods design. The first step in the study was creating testing tools, such as surveys and observation tools. The researcher's goal was to find out how students felt about their creative process, originality, and fear of failing in the digital art classroom by asking them to fill out surveys. The observation tools were used to collect qualitative information about students' engagement, risk-taking, and use of digital tools in art projects. The sample at first included 41 high school students. The sample was taken from the researchers current digital art classes. Surveys were distributed to students who volunteered to participate in order to gather their perceptions, and observations were carried out to collect qualitative data on their engagement and interaction with digital tools.

To ensure consistency and reduce external factors, participants were given a standardized email (see Appendix B) outlining the study's purpose and process. In addition, background information was shared to provide context for the study and emphasize the importance of their honest and thoughtful participation. By employing a mixed-methods design, this study provided a comprehensive understanding of the impact of technology integration on creativity and

engagement in the digital art classroom. Quantitative and qualitative data together gave us a lot of information about how students think and act, which let us look at the role of technology in art education as a whole.

Recruiting Participants

Before starting the research, an email was sent out to parents and students explaining the process that would be taking place within the class. I also reached out to my administrator to ensure that the research being conducted was approved.

Participants were asked to volunteer for the action research from within the researchers current digital art classes. Students who participated were awarded 5 points towards there formative grade for completing each reflection survey. Students who wished to participate were asked during class to complete a demographic survey (Appendix C) and an Assent form (Appendix A). Students used their school login name when completing forms so that data could be properly tracked and assessed.

How were the surveys designed?

The surveys were created as digital surveys with the intention of gathering information about students' perceptions of their creativity, originality, and fear of failure in the digital art classroom. The questions were carefully crafted to elicit honest and thoughtful responses, resulting in a thorough understanding of the students' perspectives. The questions were organized around three research questions. Open-ended questions were also included to allow students to express their ideas in their own words, while closed-ended questions provided structured information for quantitative analysis.

The surveys were reviewed by the Institutional Review Board (IRB) to ensure that they comply with applicable regulations, meet commonly accepted ethical standards, follow

institutional policies, and adequately protect research participants in the field of art education to ensure their validity and reliability. Once approved for distribution, the surveys were shared with students via my online classroom with the selected participants, maintaining transparency about the purpose of the study and the importance of their participation.

What part of this study was qualitative?

Observational check-in sheets (see Appendix F) were carried out to gather qualitative data on students' engagement, risk-taking, and use of digital tools in their art projects. The observation tools were structured to capture specific behaviors and interactions, providing rich qualitative insights into the students' experiences in the digital art classroom. However, the data was very time-consuming to gather, which made it ineffective within the timeframe used, and time constraints prevented this process from being executed; as a result, the findings were not used for the research. Checkin still occurred, but notes were not taken for analysis.

What items were gathered?

The following items were collected from each participant:

The Assent Form (see Appendix A) The assent form is a legal document that ensures the participant's willingness to engage in the research. It also outlines the purpose of the study and the participant's role, reaffirming their consent to participate. This form was complete as soon as a student volunteered to participate.

The Demographic Survey (see Appendix C) was completed at the beginning of the study. Participants were asked to complete demographic surveys to gather information about their background characteristics, such as age, gender, educational level, and prior experience with technology and art. These surveys provided important context for understanding the participants'

demographics and how they might influence their perceptions and experiences throughout the study.

The Pre-Assignment Perceptions Survey (see Appendix D) will be used prior to engaging in the assignments or activities related to technology use in the art class. Participants were asked to complete surveys to assess their perceptions, attitudes, and expectations regarding technology integration in the classroom. These surveys aimed to capture participants' initial thoughts and feelings about using technology for artistic purposes and provided a baseline for comparison with their post-assignment reflections.

Three reflection surveys per participant (see Appendix E) were completed following the completion of a project involving technology use in the art class. Participants were asked to reflect on their experiences through the reflection surveys. The survey asked participants to share their thoughts, feelings, and insights gained from the assignments, including any challenges they encountered, successes they achieved, and changes in their perceptions of technology in the art classroom. These reflections provided valuable qualitative data on the participants' lived experiences and the impact of technology integration on their learning and artistic development.

Check-in (see Appendix F). The check-in sheet was meant to keep the teacher aligned with the goal of the research. As the students worked, the teacher made it a practice to walk around the room and check in with each student, engaging in conversations about their process and ideas. This approach allowed me to observe their engagement, risk-taking, and use of digital tools in their art projects.

How were the survey data and observations stored?

Survey data was gathered and stored online using typeform.com. Storing these forms digitally provided an efficient way to collect and organize the survey responses securely. The

online platform allowed for easy access to the survey data for analysis while maintaining the confidentiality of the participants. Additionally, the use of a tracking number for each participant ensured that the data could be properly tracked and assessed, providing a layer of security and validity to the collected data.

In contrast, the observational data was originally intended to be recorded using a combination of written notes and digital recordings. However, due to time constraints and the inability to effectively gather the data, this part of the study was not executed as planned. As a result, the findings from the observational data were not included in the final analysis. Despite the limitations in the collection of observational data, the survey responses provided insights into the students' perceptions of their creative process, originality, and fear of failing in the digital art classroom.

What was the timeline?

The IRB approval consumed a little more time than expected, and the timeline was adjusted for the revision needed prior to starting the research. The completion of the 3 assignments took a span of 6 weeks. The timeline was not just limited to data collection. After gathering the survey responses and observational data, the next step involved analyzing the gathered information. The quantitative data from the surveys was analyzed using statistical methods to identify trends and patterns in the students' perceptions of creative process, originality, and fear of failing in the digital art classroom.

Overall, this mixed-methods study provided insights into the intersection of technology and art education, allowing for a better understanding of students' perspectives on the complex relationship between digital tools, creativity, and student engagement.

Reflect on the process and outcomes

Student feedback surveys were conducted following the completion of each project to gather students' opinions and perspectives on the approach and its impact on their creativity and originality. They were asked what they liked, what they did not like, and how they felt about the way things were done. These questions were completed as a survey. The teacher's observations and the students' feedback were then used to figure out what works and what does not about the way the project is being done. The instructor then considered what changes could be made to increase creativity and originality. Based on the observations and comments, the instructor made any changes to the approach required for the next project. Repeating the process of implementing the change, observing it, and considering its consequences. Modify and improve the plan to ensure that it achieves the goal of increasing creativity and originality. After three rounds of this process, the overall data was collected and analyzed.

Ethical Considerations

As the research study progressed, it was important to consider the ethical issues that occurred during the gathering of information. Due to the involvement of minors in the study, strict ethical guidelines for research with minors had to be adhered to. One of the fundamental protocols established was ensuring that both students and their legal guardians provided informed consent. Each participant or guardian completed the following forms:

Parents received a consent form (see Appendix A) to confirm their approval for their child's participation in the study. The students were also informed about the study's objectives and procedures in an age-appropriate and understandable manner. Similarly, students were given an assent form (see Appendix B) during class, which included a brief and simplified explanation of the study, allowing them to express their willingness to participate. These forms ensured that

the students and their guardians understood the nature of the research, their rights as participants, and the potential risks and benefits involved.

Throughout the data collection and analysis phase, steps were taken to ensure that the information gathered from the students was used solely for the purpose of the research and that their identities remained protected. When collecting data for the demographics survey (see Appendix D), perceptions survey (see Appendix E), and reflections survey (see Appendix F), any identifiable details were either anonymized or not included in the final analysis to maintain confidentiality.

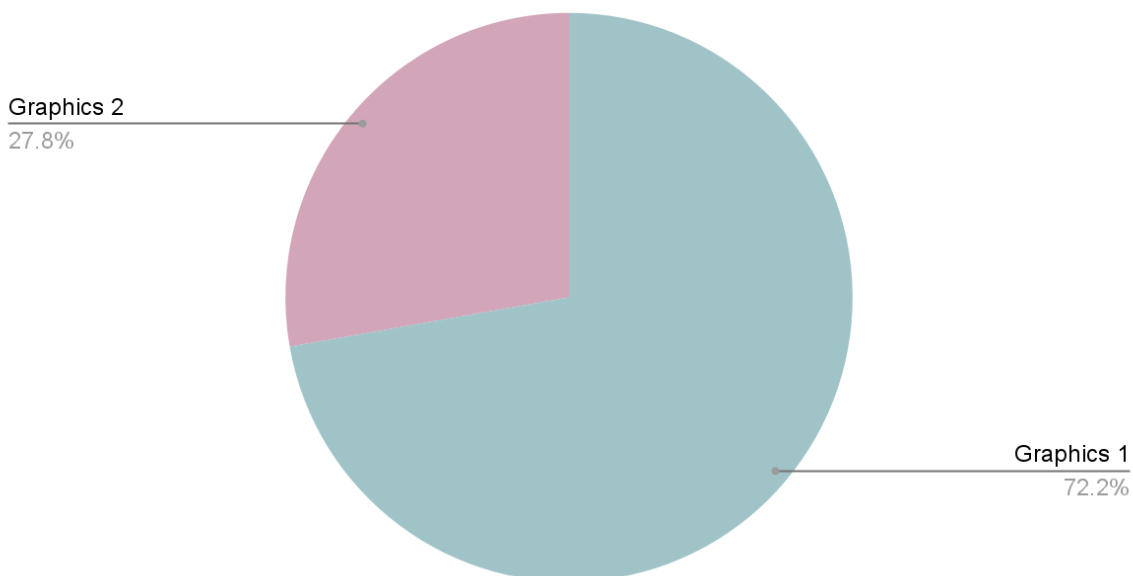
Chapter Four: Results

The study began with two surveys to establish a baseline of the perceptions and demographics of digital art students' attitudes toward using technology in a project-based classroom. During the research process, there was a decline in participation 36 of the 41 participants who enrolled and signed consent forms completed the perception survey, and then there was a decline again once reflection survey results were collected. 19 out of 41 students completed all the required surveys for participation. Participation dropped after standardized testing, a long weekend, and spring break during the research. Research was disrupted by practice breaks and student absences.

Preliminary Findings

Figure 1

Count of What digital art course are you currently taking?

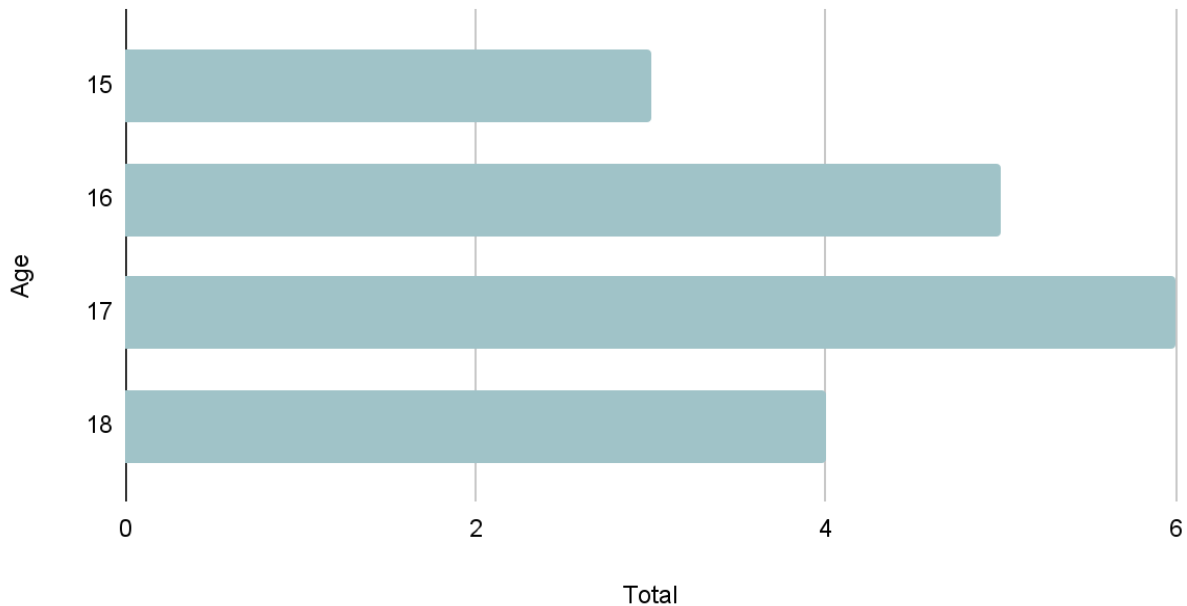


For the demographic survey (see Appendix D), 19 high school digital art volunteers responded. Students were asked their age, grade, gender, and course.

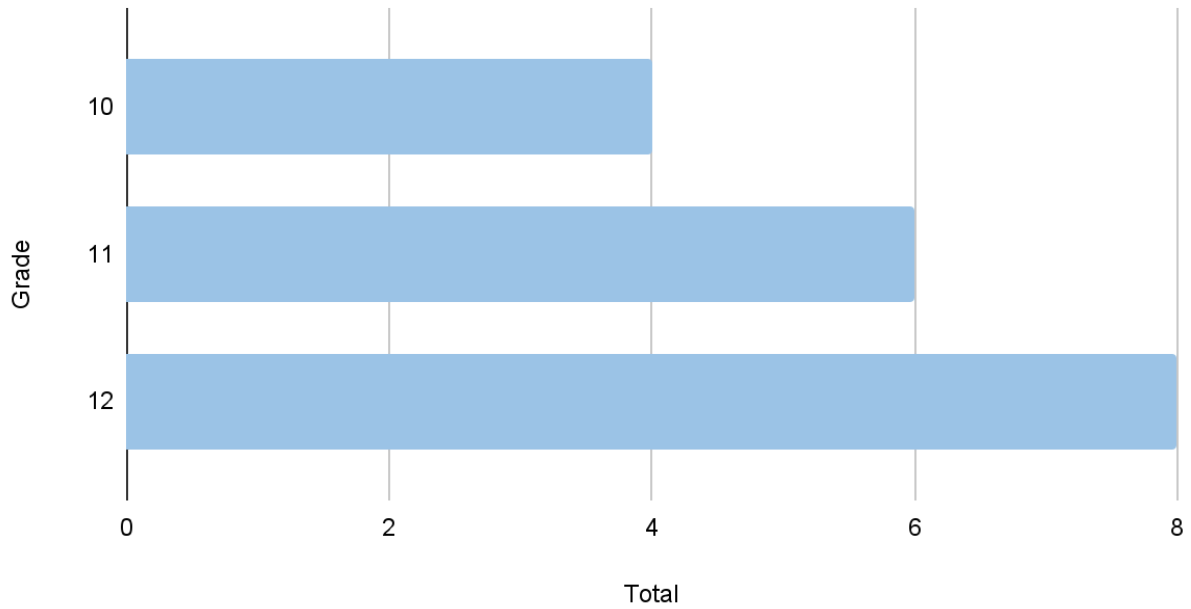
The volunteer response results shown in Figure 1 included 77.8% (14 out of 19) from Graphics 1, and 22.2% (5 out of 19) from Graphics 2

Figure 2

Count of What is your age?



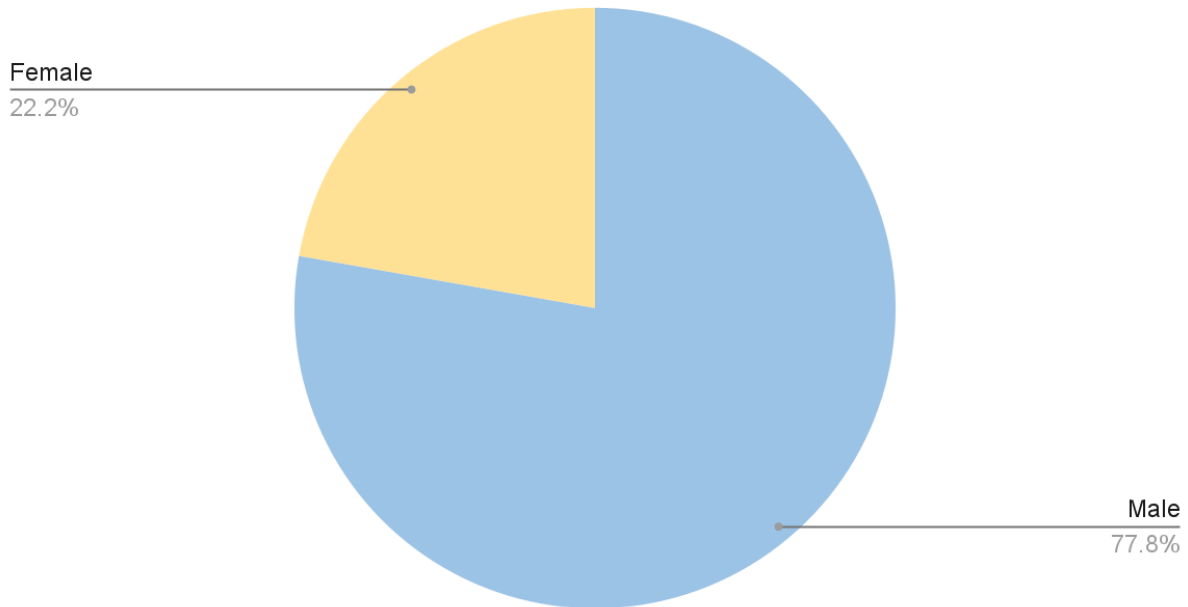
The participating students range in age shown in Figure 2 from 15 to 18 years old, with 17-year-olds accounting for 31.6% (6 of 19) of the total. The age group of 18-year-olds makes up 26.3% (5 of 19) of the total, with 16-year-olds coming in second at 26.3% (5 of 19), 15-year-olds in third at 15.8% (3 of 19).

Figure 3*Count of What grade are you currently in?*

The percentages for grade levels shown in Figure 3 are: 10th grade accounting for (4 out of 19), 1%, 10th grade (6 out of 19); 1.5% and gradeis (9 out of 19), and 47.3%.

Figure 4

Count of What is your gender?



The survey participant genders shown in Figure 4 were predominantly male, with a majority of 77.8% (15 out of 19) identifying as male. Out of the total, 22.2% (4 out of 19) were female.

Perceptions Survey

The first survey students were asked to complete was the Pre-Assignment Perceptions Survey (see Appendix E). This survey gathered digital art students' perceptions of the use of technology through a 20-question Survey. The perception and reflection surveys were created as online surveys with the intention of gathering information about students' perceptions of their creative process, originality, and fear of failure in the digital art classroom. The questions were carefully crafted using a Likert scale format in order to gather a quick and simple gauge of the students' perspectives. Open-ended questions were not included in the pre-assessment but were reserved for later use in the reflection. This enabled students to express themselves in their own words, whereas closed-ended questions provide structured data for quantitative analysis.

The Institutional Review Board (IRB) reviewed the surveys to ensure that they comply with applicable regulations, meet commonly accepted ethical standards, adhere to institutional policies, and adequately protect art education research participants to ensure their validity and reliability. Once approved for distribution, the surveys were distributed to the volunteer participants via an online classroom.

Some common concerns or problems that participants experienced when using technology for creative purposes include difficulty balancing technology use with maintaining focus on creative tasks, concerns about digital distractions impacting the learning environment, fear of failure or increased anxiety related to using digital tools for creative work, uncertainty about whether rules and standards for technology use in the classroom are clear and effective, and challenges. These concerns highlight the complex relationship between technology and creativity, emphasizing the need for effective guidelines, support, and strategies to maximize the creative potential of digital tools in educational settings. The survey questions used were developed in relation to the three research questions and will be organized and analyzed accordingly.

Research Questions

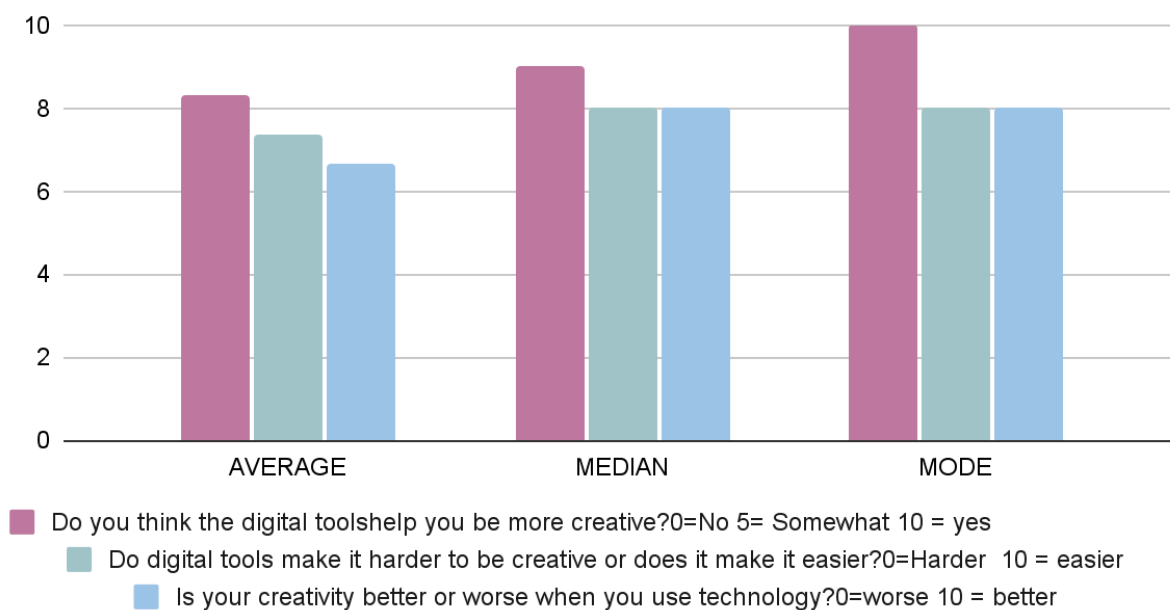
Research Question 1: In what ways does the use of technology influence students' creativity, originality, and engagement in the context of a digital art classroom?

The perception survey (see Appendix E) was developed to better understand how students perceived the daily creative process in the classroom. Although teachers adjust regularly in the classroom based on observable data, there is a great deal of unseen student perception in a digital art classroom, and the goal of this study was to use that information to determine whether guided practice is the best practice.

As shown in Figure 5, The average ratings for the use of digital tools in the classroom and technology in general demonstrate differences in how participants perceive these factors. For example, student participants rated the impact of digital tools on creativity at an average of 7.3 out of 10. These findings suggest that students believe digital tools have a positive effect on their

Figure 5

Students perceptions of digital tools on creativity



creativity. Suggesting they believe they make them more creative and value Adobe apps for enhancing their creativity. When asked, do you think the digital tools and Adobe apps in the room help you be more creative? 0 equals no, and 10 equals yes. Students were assigned an average rating of 8.3 out of 10. The average rating for general technology use was slightly lower, at 7.3 out of 10. This suggests that, while students recognize the importance of digital tools in particular, their overall opinion of technology is slightly negative. There are many potential causes of this perception gap between digital tools and technology in general, including familiarity with particular tools or experiences with technology in various contexts.

A two-tailed t-test was performed on the Perceptions Survey result for the following: Perceptions 1: "When asked, do you think the digital tools and Adobe apps in the room help you be more creative? " 0 equals no, while 10 equals yes." and Perceptions 2: Is your creativity better or worse when you use technology? 0 equals worse, 5 equals Neither 10 equals better to determine if a significant difference existed between the two perspectives. Perceptions Question 1 ($M = 8.37$, $SD = 1.53$) and Perceptions Question 2 ($M = 7.47$, $SD = 2.01$), $t(17)$, $p = 0.14$.

The results of the two-tailed t-test resulted in a p-value of 0.141, which exceeds the commonly used significance level of 0.05. This suggests that participants did not perceive a significant disparity between whether digital tools and Adobe apps specifically enhance creativity compared to the general effect of technology on creativity.

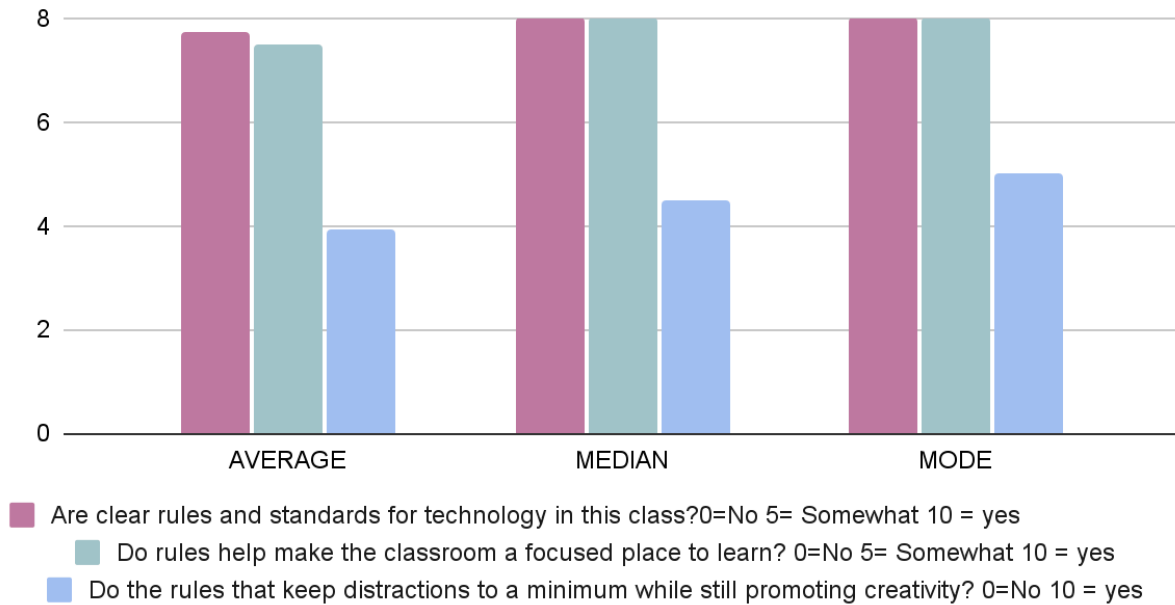
Further investigation revealed that the differences in perception were more pronounced across age groups. For example, students aged 15 rated the impact of digital tools on creativity higher than their older peers. Conversely, concerns about digital distractions and uncertainty about rules and standards for technology use were more prevalent among 11th and 12th graders.

The survey results also revealed useful information about gender differences in perceptions. Male respondents were more confident in the positive impact of digital tools on creativity than female respondents. On the other hand, female participants were more likely to report difficulties in reflecting on and improving their use of digital tools in the creative process. Concerns about the potential difficulty of being creative with digital tools were given an average rating of 7.4 out of 10.

As shown in Figure 6, the presence of rules to minimize digital distractions while using technology received an average rating of 6.4 out of 10. These findings highlight the importance

Figure 6

Rules Effects on Technology

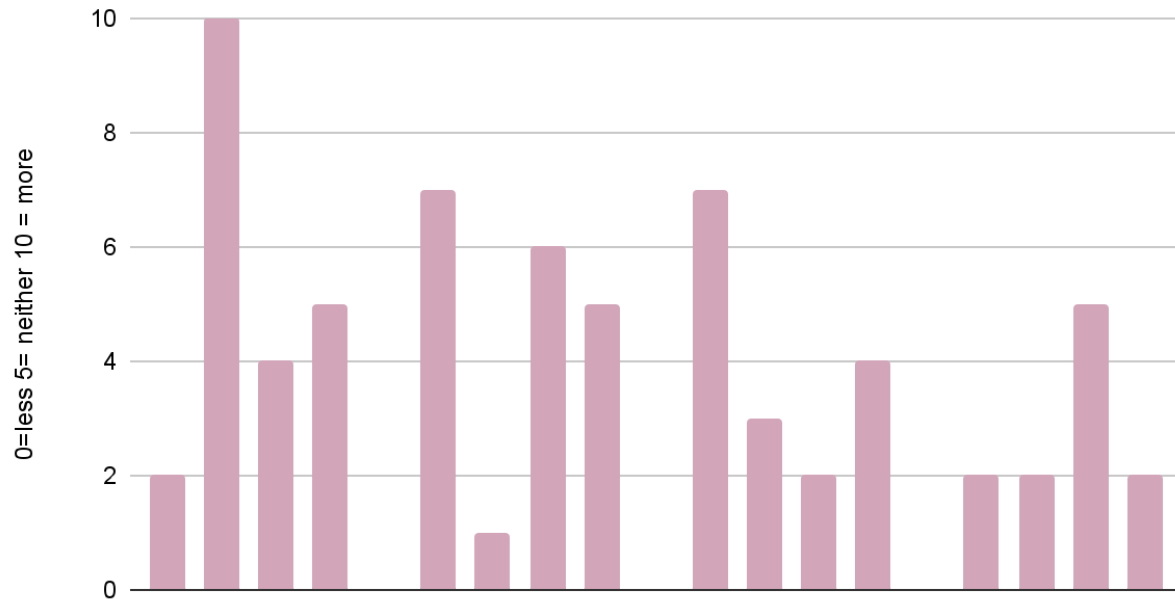


of setting clear guidelines and boundaries to reduce digital distractions and foster creativity and focused learning. Furthermore, the disparities in perceptions across age groups and gender identities highlight the need for a nuanced and inclusive approach to incorporating technology into the digital art classroom.

As shown in Figure 7, the effect of technology on creativity and the fear of failure received an average rating of 3.6 out of ten. 1 equals less afraid, while 10 equals more afraid. A two-tailed t-test was performed on the Perceptions Survey result for Perceptions 1: “Do you think the digital tools and Adobe apps in the room help you be more creative? 0 equals no; 5 equals Somewhat 10 equals yes,” and Perceptions 2: “Does using digital tools make you less afraid of failing or more afraid of it? 0 equals less, 5 equals neither, and 10 equals more to determine if a significant difference existed between the two perspectives. There was no

Figure 7

Does using digital tools make you less afraid of failing or more afraid of it?



significant difference between achievement scores for Perceptions Question 1 ($M = 8.36$, $SD = 1.52$), and Perceptions Question 2 ($M = 3.52$, $SD = 2.66$), $t(17)$, $p = 0.00$.

The t-test results indicated that there was no significant difference between the mean scores of Perceptions Question 1 and Perceptions Question 2, with a p-value of 0.00. While participants generally perceive digital tools in the room as having a positive impact on creativity, their perception regarding the effect of these tools on fear of failure is more neutral. However, the difference in perception between these two aspects was not found to be statistically significant in this study. Therefore, the conclusion drawn from this data is that participants in this small study This suggests that while digital tools may be perceived as helpful for enhancing creativity, their role in mitigating or exacerbating fear of failure may not be as clear-cut. It could be valuable for educators or researchers to further explore how digital tools are perceived in

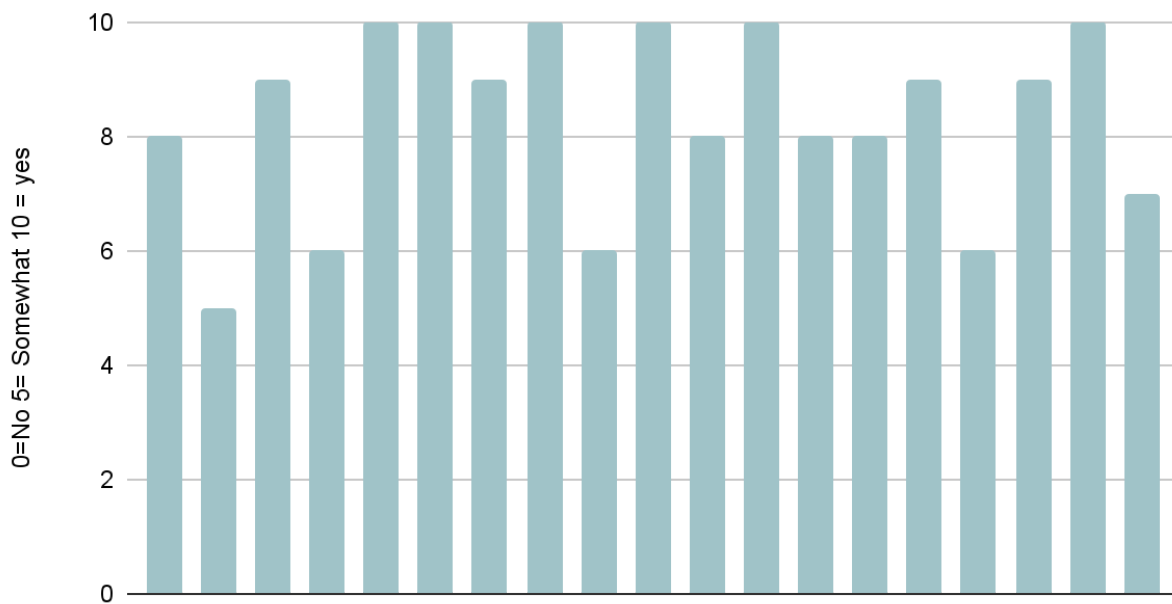
relation to both creativity and fear of failure, as well as how these perceptions might influence students' attitudes and behaviors in educational settings.

How do different types of digital tools (e.g., Adobe software) affect students' engagement and learning experiences in art classes?

As shown in Figure 8, an average rating of 8.38 out of 10 indicates that participants believe digital tools like Adobe apps in the classroom help them be more creative. The use of

Figure 8

Do you think the digital tools and Adobe apps in the room help you be more creative?



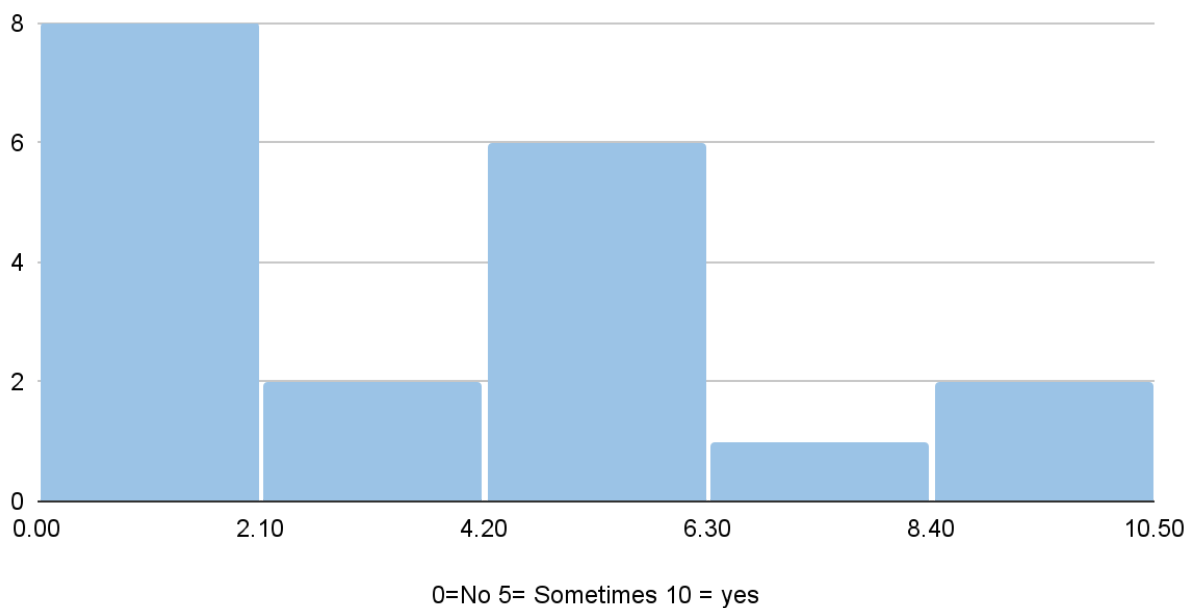
Adobe software and other digital tools provides students with a platform to explore their creativity, experiment with various artistic techniques, and engage in interactive and visually stimulating art projects. Digital tools like Adobe software allow for personalized learning experiences tailored to individual student needs and interests. As observed during class, students can explore different features of the software, experiment with various artistic styles, and create

projects that align with their creative passions, leading to a more personalized and engaging learning experience.

As shown in Figure 9, participants expressed little concern about technology making it harder to concentrate on art, with an average rating of 3.94 out of 10; 1 equals not a distraction,

Figure 9

Do digital tools like cell phones and the internet make it harder for you to concentrate on your art?



and 10 equals a distraction. This implies that students do not perceive technology like cell phones and the internet as a potential hindrance to their focus and concentration in the context of creating art. This drastically contradicts the observations made during class instruction, where some students frequently seemed distracted by their devices during creative activities. This contradiction emphasizes the importance of understanding the gap between students' perceptions and observed behaviors, as well as the need for further research into the factors that contribute to this disparity.

A two-tailed t-test was performed on the Perceptions Survey result for the following Perceptions 1: "When asked, do you think the digital tools and Adobe apps in the room help you be more creative? "0 equals no, while 10 equals yes." and Perceptions 2: Do digital tools like cell phones and the internet make it harder for you to concentrate on your art? 0 equals No, 5 equals Sometimes, 10 equals yes, to determine if a significant difference existed between the two perspectives. There was no significant difference between achievement scores for Perceptions Question 1 ($M = 8.36$, $SD = 1.53$) and Perceptions Question 2 ($M = 3.84$, $SD = 3.09$), $t(17)$, $p = 0.00$.

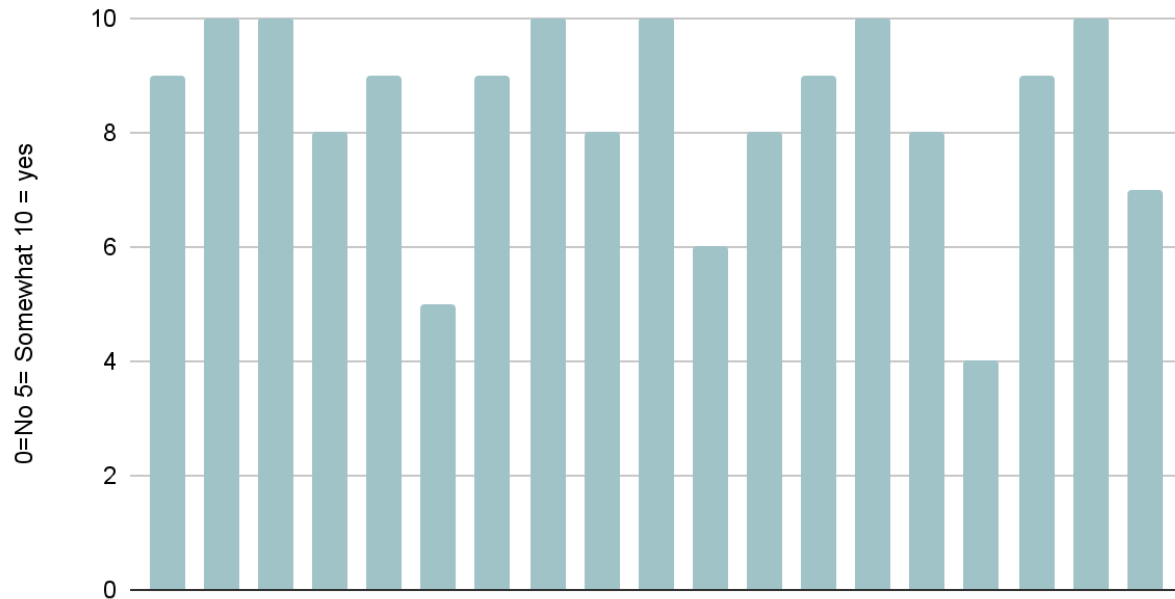
The mean score for Perceptions Question 1 was 8.36, indicating that, on average, participants believe that digital tools in the room help them be more creative. In contrast, the mean score for Perceptions Question 2 was 3.09, suggesting that participants, on average, do not strongly feel that digital tools like cell phones and the internet make it harder for them to concentrate on their art. Despite the differences in mean scores, the t-test results indicated that there was no statistically significant difference between the two perceptions, with a p-value of 0.00. As a result, the data doesn't show a significant relationship between the perceived impact of digital tools on creativity and the difficulty of focusing on art due to digital tools such as cell phones and the internet.

What role do teacher training and professional development play in enhancing educators' ability to effectively integrate technology into the art curriculum?

According to the perception survey results shown in Figure 10, teacher guidance in assisting students in discovering their own distinct ways of thinking through technology received

Figure 10

When using technology, do you feel the teacher guides you and helps you your unique ways of thinking?

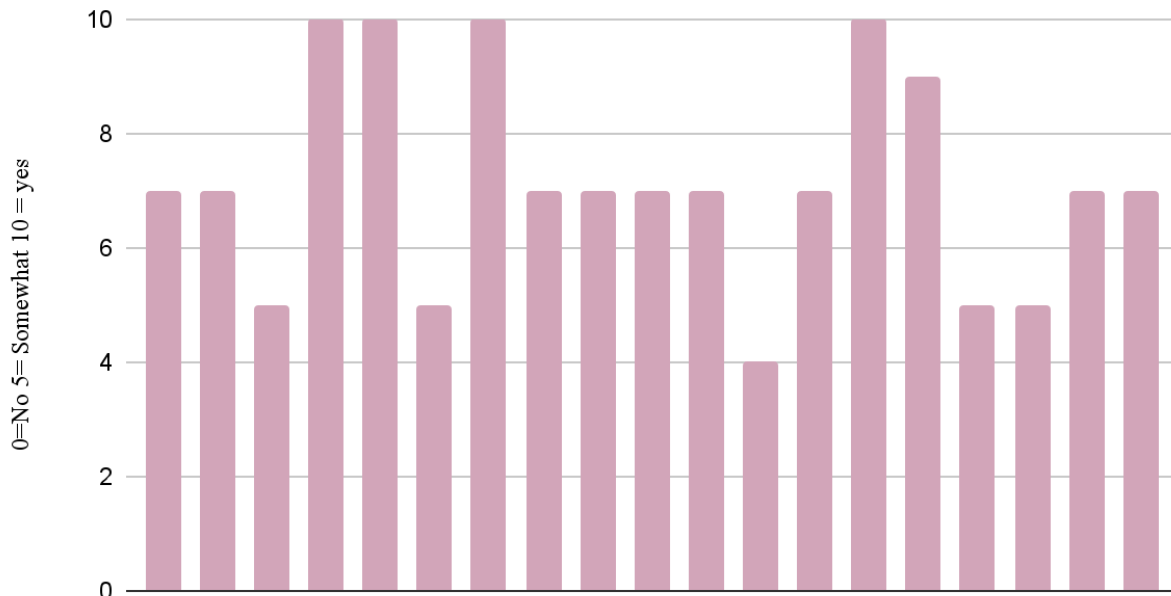


a high average rating. This suggests that using digital tools, such as Adobe software, under proper teacher supervision can improve students' learning experiences by encouraging them to think creatively and develop their artistic skills in novel ways. Students gave teacher guidance in assisting students in developing unique ways of thinking using technology and 8.3 out of 10. This demonstrates that students place a high value on teacher guidance when developing new ways of thinking with technology. The data also demonstrated the importance of having clear and effective rules and standards for using technology in the classroom, as many participants expressed uncertainty. These findings emphasize the importance of supporting and guiding students as they use digital tools for creative purposes, as well as educators' roles in fostering a positive and productive technology-infused learning environment.

As shown in Figure 11, the teachers' discussions about potential technological issues and

Figure 11

Does your teacher talk about the problems that could happen because of technology and try to keep



how to mitigate them received an average rating of 7.16 out of 10. This suggests that while participants recognize the value of teacher discussions about potential technology-related problems and how to mitigate them, the rating is above average, suggesting that there may be areas for improvement in how teachers address technological challenges and solutions. There may be opportunities to enhance the depth or effectiveness of these discussions to better prepare students and educators for navigating technological issues in the learning environment. This emphasizes the importance of ongoing improvement of content knowledge on changes in technology for educators to successfully integrate technology into the art curriculum and address challenges that may arise. It also emphasizes the importance of teacher reflections at the end of each unit, which allow for future reference on any issues that may arise.

A two-tailed t-test was performed on the Perceptions Survey result for the following Perceptions 1: "When you use technology, do you feel like your teacher guides you and helps you find your own unique ways of thinking? 0 equals No, 5 equals Somewhat, 10 equals yes" and Perceptions 2: "Does your teacher talk about the problems that could happen because of technology and try to keep them to a minimum? 0 equals No, 5 equals Somewhat, 10 equals yes" to determine if a significant difference existed between the two perspectives. Question 1 ($M = 8.36$, $SD = 1.72$) and Perceptions Question 2 ($M = 7.15$, $SD = 1.84$), $t(17)$, $p = 0.049$.

The results of the two-tailed t-test conducted on the perceptions survey data indicate a significant difference between participants' views on teacher involvement in guiding students to explore unique ways of thinking through technology and their perception of teachers' efforts to minimize technological problems in the classroom. This suggests that the difference in mean scores observed between perceptions in Question 1 and Question 2 is unlikely to have occurred by random chance alone. The data suggest that, in this study, participants perceived a significant difference in their teacher's guidance and support regarding finding unique ways of thinking with technology compared to their teacher's efforts to address and minimize potential problems associated with technology use.

Reflections Surveys

The first lesson was self-guided, with students given directions, tools, and sample projects to help them explore and create their own digital artwork. The teacher was primarily a guide, assisting students as they worked. but didn't demonstrate any specific techniques or provide step-by-step instructions. Students then provided feedback on their experiences via a reflection survey. The results of this process are still being gathered. But I am hopeful that they

will provide useful information about how technology integration affects students' learning experiences and creative development in the art classroom.

The second lesson will be more structured, with explicit instruction on specific techniques using technology. Students will participate in class demos of tools, practice lessons, and receive step-by-step instructions from the teacher to help them develop their digital art skills. During this skill-building period, students will not be graded on their creativity but will be given time to learn the technology aspect of the lesson before engaging in more creative and independent projects. This will create an environment free of the fear of failure. After completing this series of lessons and projects, students will be asked to complete a reflective survey.

The third lesson will include all of the elements from the second lesson, as well as the opportunity for students to collaborate and work in groups to create a digital art project. Students will also participate in a group gallery walk and critique of their work, which will allow for feedback and reflection. This multifaceted approach to incorporating technology into the art classroom seeks to provide students with diverse experiences and opportunities for reflection. Students will then complete a reflection survey to gain a thorough understanding of their thoughts and perceptions about the integration of technology in teaching and learning. The use of technology in the art classroom aims to provide students with a variety of experiences that foster creativity, skill development, and collaboration. This will assist in determining which best practices will produce the most effective learning outcomes and creative development for students

Upon analyzing the reflection survey data, several key themes emerged. The majority of students expressed positive attitudes towards the use of technology in the classroom, citing increased engagement and a deeper understanding of the material. However, some students also

highlighted concerns about technical difficulties and distractions. This data suggests that while technology has the potential to enhance the learning experience, there are also challenges that need to be addressed to fully harness its benefits.

Research Questions

Research Question 1: In what ways does the use of technology influence students' creativity, originality, and engagement in the context of a digital art classroom? Based on the data provided, the use of technology in a digital art classroom influences students' creativity, originality, and engagement in several ways. Technology can enhance the creative process by providing tools and resources that enable students to experiment with different techniques, styles, and ideas, fostering creativity. For example, the ability to undo actions and make revisions easily encourages students to take risks and explore new artistic possibilities without the fear of making mistakes.

Several students provided qualitative responses explaining how digital tool were perceived and improving their process when asked: “Did the integration of digital tools enhance your creativity and originality in this project? ” Below are a few examples:

- “Yes, because it would have taken a long time to create the same project by hand, and doing it digitally created order and organization.”
- “The integration of digital tools enhanced my creativity and originality in this project because, with the tools, I was able to make whatever I wanted out of type.”
- “It allowed me to make designs that I would normally shy away from if done on paper because of how long it would take.”

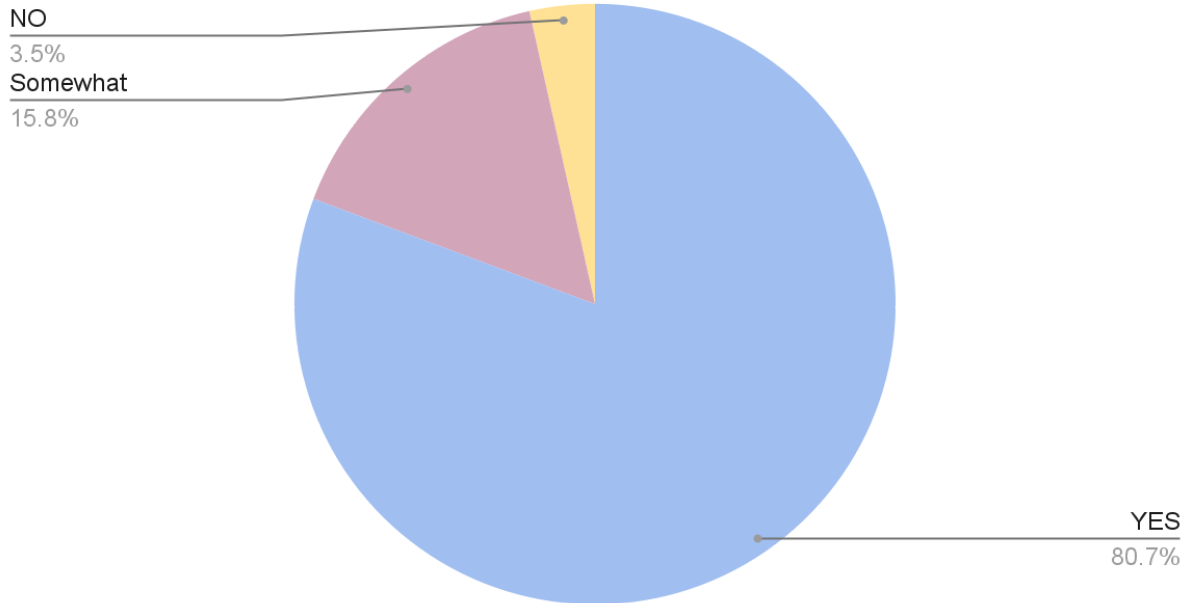
- “To me, using Photoshop is super fun to do. Using Photoshop's different tools was really cool to work with and play with. It helped me create this environment that is fictional but still realistic.”
- “Yes, without Photoshop, this project would be close to impossible to make look realistic. It made cutting pictures and fixing lighting very easy.”

Overall Digital tools offer opportunities for students to create unique and personalized artworks by providing features for customization and experimentation. The integration of digital tools allows students to express their ideas in innovative ways, leading to more original and distinct artistic outcomes. One student replied, “The integration of digital tools enhanced my creativity by allowing me to make a bunch of cats and cat towers huge and put them in a background with a mountain surrounded by clouds. I was also able to make the cats and cat towers blend in with the background using the filter tools.”. This implies that students are able to push the boundaries of their creativity, creating complex and detailed artworks that would not have been possible without the use of digital tools.

Figure 12 shows that integrating technology in the art classroom improved students' engagement with the subject matter. The ability to work with digital tools and software has not only piqued students' interest but has also encouraged them to explore and experiment with new artistic techniques. One student stated, "I found the digital aspect of this project to be very engaging because I was able to explore design concepts that I would not have otherwise and easily manipulate and change my ideas without having to start from scratch." This suggests that students view the project's digital component as a chance to expand their creative horizons free from traditional limitations. This kind of flexibility and adaptability in the creative process can lead to a more engaged and invested approach to artistic exploration.

Figure 12

Did the integration of digital tools enhance your creativity and originality in this project? YES No



The data also suggests that the use of technology fosters a sense of ownership and pride in the students' work. Many expressed that the ability to manipulate and design their projects digitally allowed them to take more risks and showcase their unique style and perspective. This sense of ownership over their creative process has resulted in an increased sense of confidence and pride in their work.

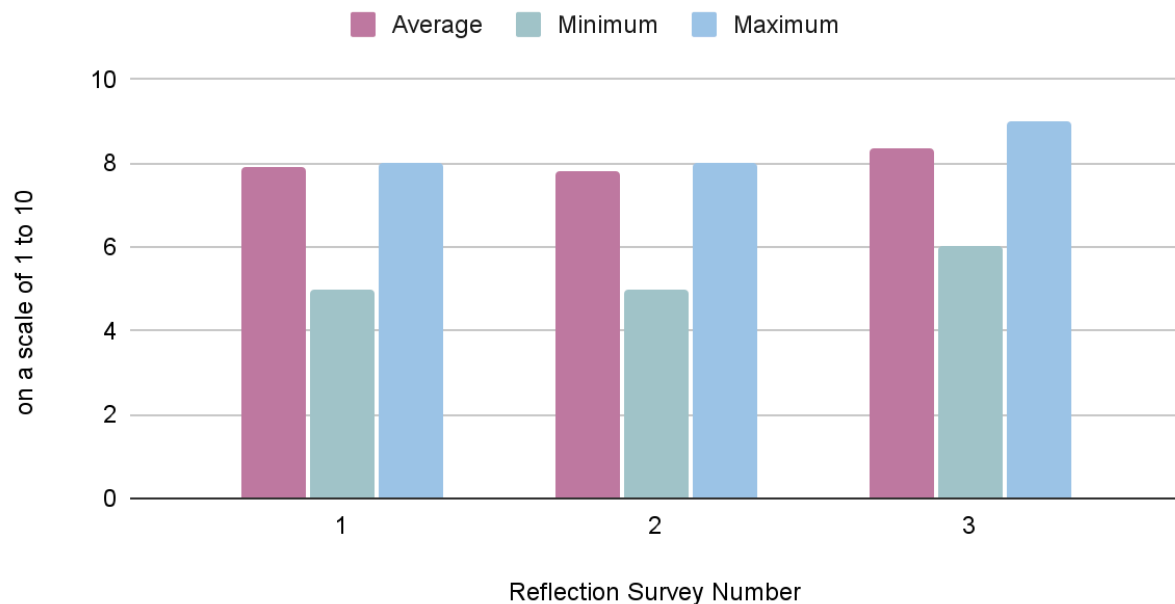
The interactive nature of digital tools, such as real-time feedback mechanisms and collaborative features, enhances student engagement in the creative process. Students are more motivated to explore and learn when they have access to tools that facilitate communication, feedback, and the sharing of ideas with peers and instructors. Technology in the digital art classroom helps students develop technical skills in using software and tools like Adobe Photoshop and Illustrator. Through practice and exploration, students gain proficiency in digital

art techniques, which in turn boosts their confidence and willingness to experiment with different digital tools.

Students in Figure 13 rated their overall experience working with the digital tools used in their

Figure 13

Rate your overall experience with the digital tools used in this project.



projects in Adobe Photoshop and Adobe Illustrator with an average score of 8.01. Working with digital tools challenges students to think critically and creatively to overcome technical obstacles and design challenges. The process of troubleshooting and finding solutions while using technology contributes to the development of problem-solving skills in students. One student explained how technology is helping them connect ideas “Yes, without Photoshop, this project would be close to impossible to make look realistic. It made cutting pictures and fixing lighting very easy.” Digital tools and guided exploration give them the confidence to explore new styles, ideas, and concepts, inspiring them to think outside the box and push the boundaries of their

creativity. The ability to try different approaches quickly and visualize concepts digitally encourages students to experiment and innovate in their artistic endeavors.

A two-tailed t-test was performed on the Perceptions Survey result for the following: Perceptions 1: "Is your creativity better or worse when you use technology? 0 equals worse, 5 equals neither, and 10 equals better" and Perceptions 2: "How would you rate your overall experience with the digital tools used in this project on a scale of 1 to 10, with 10 being the most positive?" to determine if a significant difference existed between the two perspectives. Question 1 ($M = 6.78$, $SD = 2.60$) and Perceptions Question 2 ($M = 8.36$, $SD = 1.49$), $t(17)$, $p = 0.032$.

With a p-value of 0.032, the observed difference in perceptions of creativity when using technology versus not using technology is statistically significant. This means that the difference in perceived creativity between the two conditions is unlikely to be due to random chance alone. The statistically significant p-value indicates that this difference is meaningful and suggests that students perceive their creativity to be significantly better when not using technology compared to when not using it.

The standard deviations for both questions remain relatively low, indicating consistent responses among students. Despite the significant difference in perceptions of creativity, there appears to be a level of agreement among students in their ratings. With a significant p-value, it's reasonable to conclude that students perceive a meaningful difference in creativity when using technology compared to not using it. The data suggests that students perceive their creativity to be significantly better when not using technology.

While not directly measured in this analysis, it's possible that despite the lower perceived creativity when using technology, students still rate their overall experience with the digital tools

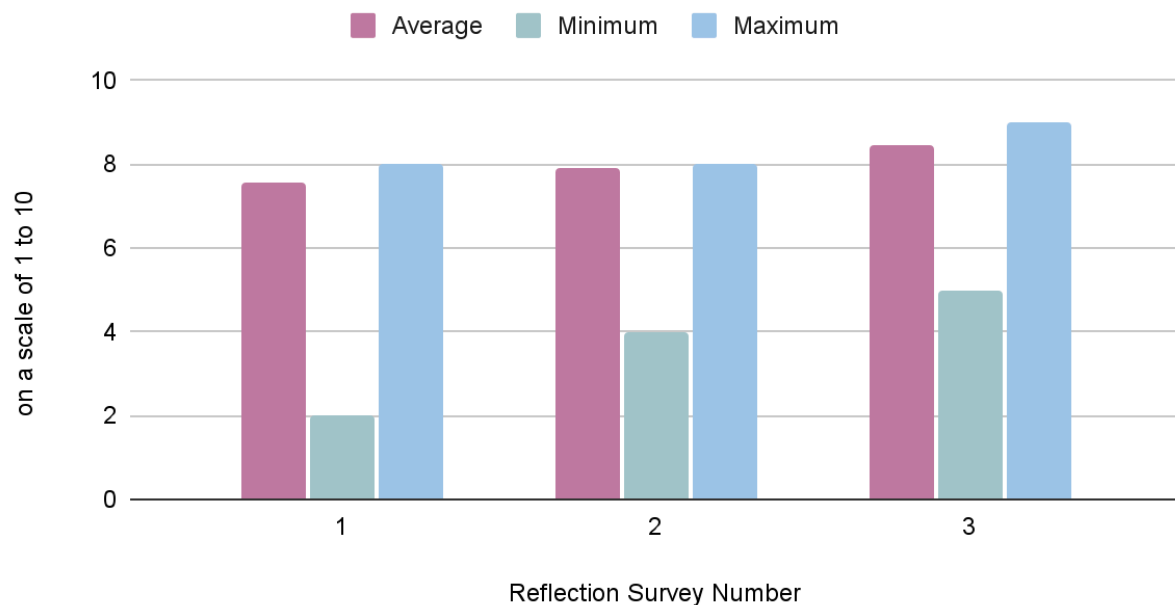
used in the project positively. However, this would require additional data or survey questions to confirm.

Research Question 2: How do different types of digital tools (e.g., Adobe software) affect students' engagement and learning experiences in art classes?

Based on the data gathered in Figure 14, guided practice helps to improve students' understanding of different types of digital tools, particularly Adobe software like Photoshop and Illustrator, which has a significant impact on students' engagement and learning experiences as well as comfort and confidence levels in art classes.

Figure 14

Did the guided exploration help you understand digital tools for artistic expression?



Using Adobe software provides teachers with the tools to enhance creativity and experimentation; it also provides students with a wide range of tools and features that allow them to experiment with different artistic techniques, styles, and effects. The ability to manipulate

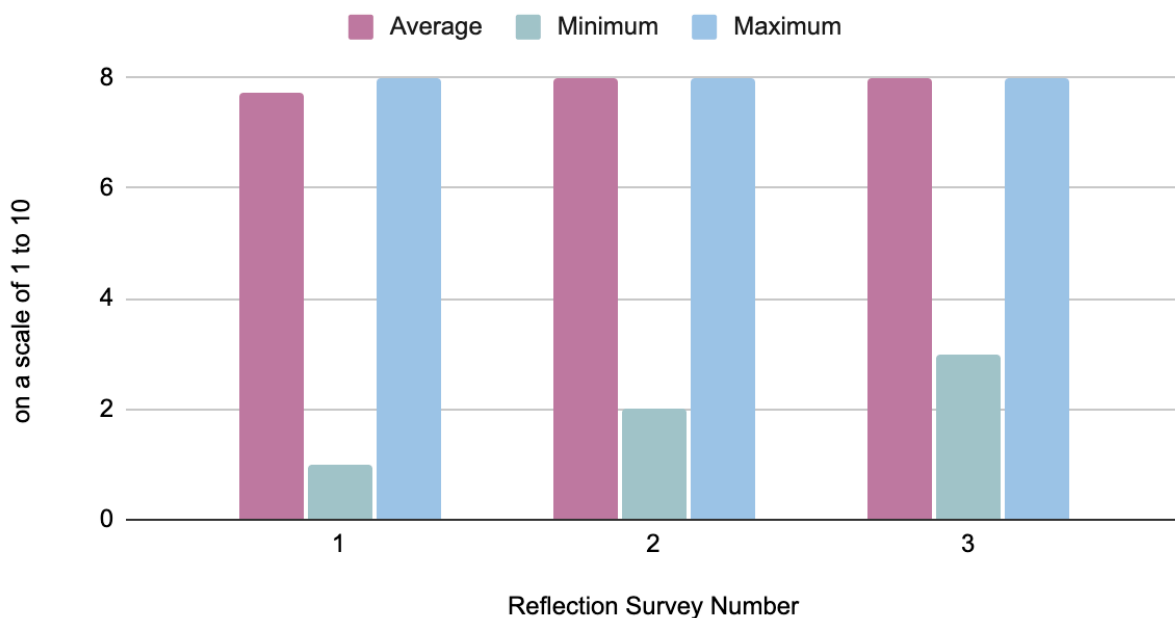
ideas digitally enables students to explore creative process and express their artistic vision in innovative ways.

The digital tools, including Adobe software, offer features like undo options, layers, and real-time feedback, which help students feel more confident in their work and motivated to explore new possibilities. The ease of revising and refining their projects without the fear of making irreversible mistakes boosts students' confidence in their artistic abilities.

In Figure 15, when students were asked, “On a scale of 1 to 10, how confident do you

Figure 15

How confident and less afraid of failing do you feel after completing this project?



feel in experimenting with different digital techniques after completing this project?” The average response of 7.98 on a scale of 1 to 10 regarding the confidence in experimenting with different digital techniques after completing the project suggests that students generally felt quite confident in their ability to explore and utilize various digital techniques in their art projects.

This average score indicates that the majority of students rated their confidence level above the midpoint of the scale, reflecting a positive perception of their skills and proficiency in experimenting with digital tools. The high average score suggests that the integration of digital tools, such as Adobe software, in the art projects was effective in boosting students' confidence and competence in utilizing different digital techniques for artistic expression. Overall, the average response of nearly 8 out of 10 implies that students felt well-prepared and empowered to continue exploring, learning, and applying diverse digital techniques in their future projects. It indicates a guided practice and teacher with high content knowledge produced successful outcome in terms of enhancing students' confidence and readiness to engage with digital tools for creative expression and experimentation.

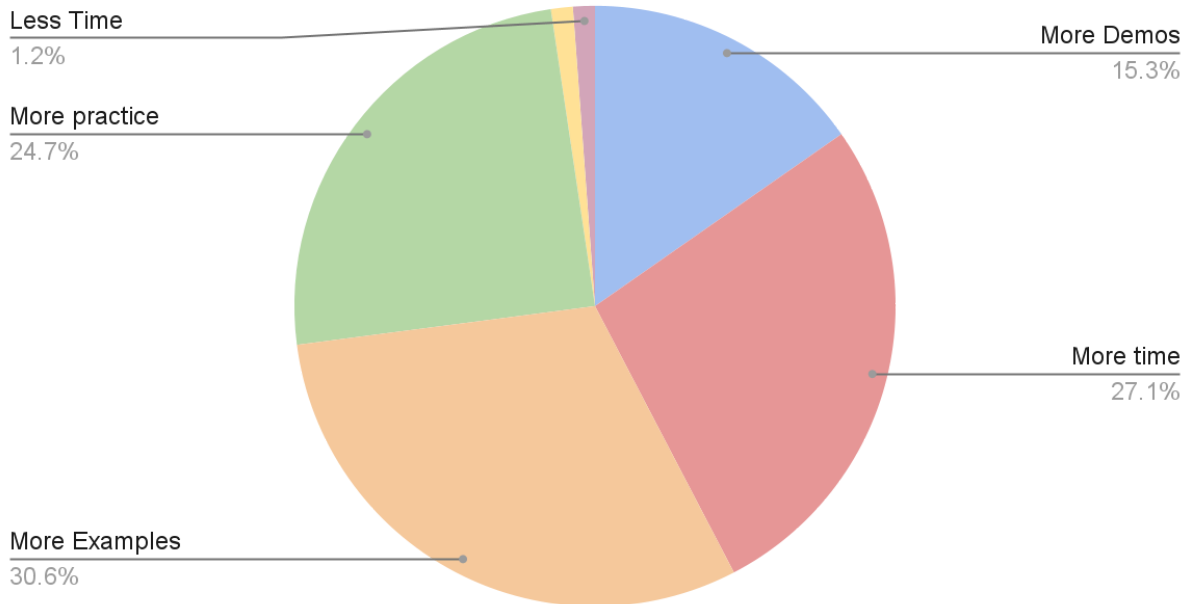
Question 3: What role do teacher training and professional development play in enhancing educators' ability to effectively integrate technology into the art curriculum?

The data gathered showed that students identified several aspects of their learning experiences with digital tools in art classes that they believe could be improved. As shown below in Figure 16, 15.3% of students expressed a desire for more demonstrations or tutorials to help them better understand how to use digital tools. Additional demonstrations could provide step-by-step guidance on using specific features or techniques in software like Adobe Photoshop and Illustrator, enhancing students' technical skills and confidence in digital art creation. 24.7% of students mentioned the need for more time to practice and explore digital tools in their art projects. Allowing for more time for hands-on practice and experimentation with digital tools would enable students to deepen their understanding, refine their skills, and engage more fully in the creative process. 30.6% indicated that having more examples or case studies to reference would be beneficial for their learning experiences. Providing a variety of examples showcasing

different artistic styles, approaches, and applications of digital tools could inspire students, spark creativity, and offer valuable insights into the effective use of technology in art creation.

Figure 16

What aspects of the guided Practice could be improved to enhance the learning experience?



Some students expressed a desire for clearer guidance and support in utilizing digital tools for artistic expression. This suggests that offering structured guidance, feedback, and resources tailored to students' skill levels and learning objectives could help them navigate the complexities of digital art software more effectively and achieve their artistic goals. Despite increasing demos and practice as we worked through the 3 guides practice projects, students still perceived there was not enough practice, demos, time, and examples.

In Figure 17, students showed that they perceive, practice, examples, and time for the process of creating the most beneficial items to their creative process. Students perceive videos and reviews as the most ineffective way to develop the creative process. This suggests that students perceive certain methods as more beneficial than others for enhancing their creative

process. Specifically, they perceive activities such as receiving examples, practicing, and having time for the creative process as the most beneficial. The preference for activities like practicing and engaging with examples suggests that students may benefit most from interactive and immersive learning experiences that allow them to actively participate in the creative process.

Figure 17

Were there specific activities that you found particularly beneficial to the creative process?

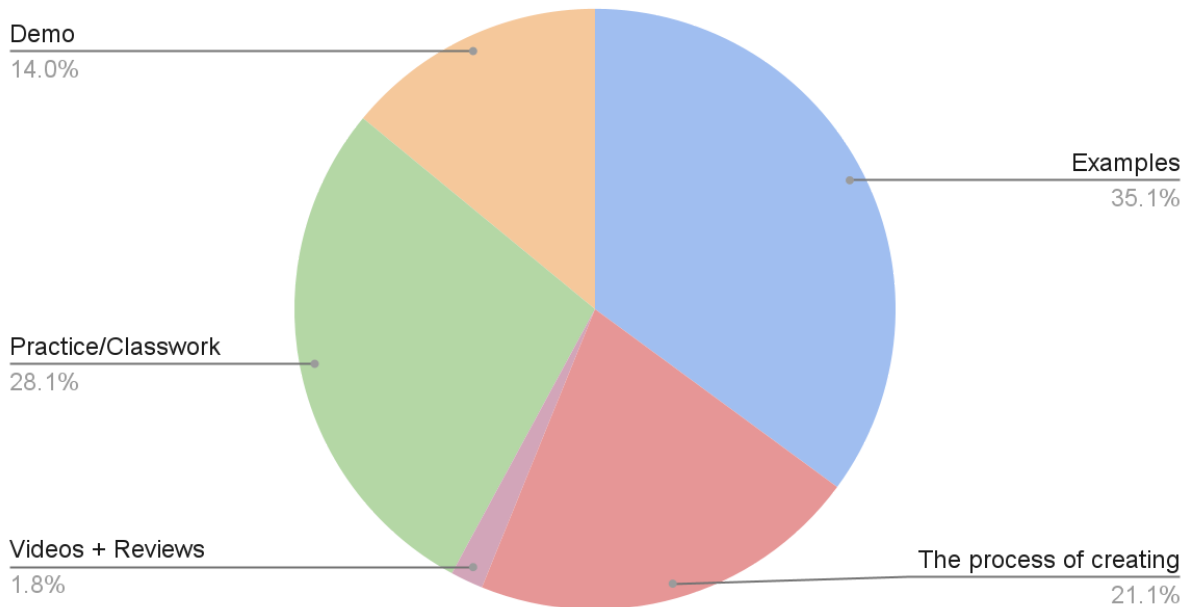
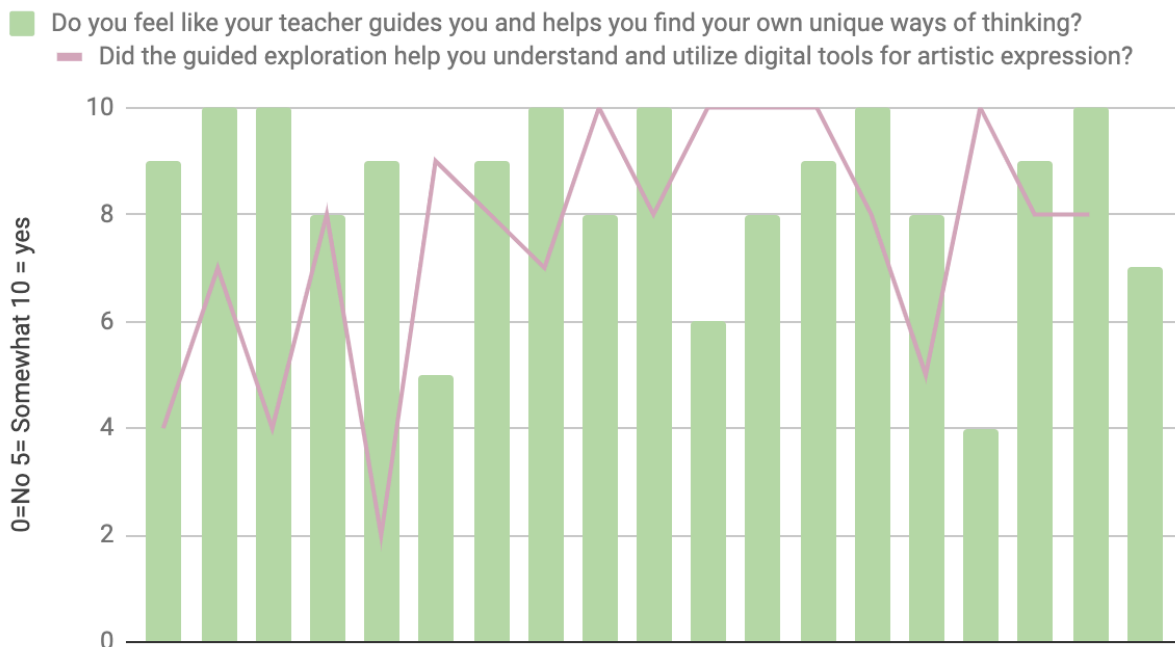


Figure 18 compares the students perceptions of the survey results from the question, "

Figure 18



When you use technology, do you feel like your teacher guides you and helps you find your own unique ways of thinking? 0 equals No, 5 equals Somewhat, 10 equals yes". To the reflection survey question of "Did the guided exploration during class help you understand and utilize digital tools for artistic expression?"

The mean values for the perception survey question related to teacher guidance in technology use (mean 1 = 8.37) suggest that students generally perceive their teachers as effective in guiding them and helping them find their unique ways of thinking when using technology. This higher mean indicates that teachers are likely successful in providing support and direction in technology integration.

A two-tailed t-test was performed on the perceptions survey vs. reflections survey result for the following: Perceptions 1: "When you use technology, do you feel like your teacher guides

you and helps you find your own unique ways of thinking? 0 equals No, 5 equals Somewhat 10 equals yes". and Refectio "Did the guided exploration during class help you understand and utilize digital tools for artistic expression?" to determine if a significant difference existed between the two perspectives. Question 1 ($M = 8.36$, $SD = 1.72$) and Perceptions Question 2 ($M = 7.52$, $SD = 2.25$), $t(17) p = 0.05$.

The t-test results, along with the mean values, imply that there is a significant difference between how students perceive teacher guidance in technology use and the impact of guided exploration on their understanding and utilization of digital tools for artistic expression. This suggests that while the teacher is perceived positively in guiding technology use, there may be opportunities to further enhance the effectiveness of guided exploration activities to better support students in utilizing digital tools for artistic expression.

Based on these implications, educators should consider refining their guided practice strategies to foster deeper engagement, creativity, and critical thinking skills among students when using digital tools for artistic expression. Providing more tailored support, feedback, and opportunities for hands-on exploration can help bridge the gap between teacher guidance in technology use and the effectiveness of guided practice for artistic expression, ultimately enhancing students' learning experiences and outcomes.

The data suggests that students perceive the support they receive from teachers in terms of knowledge, guidance, feedback, and encouragement as instrumental in their learning journey with technology in art projects. The teacher plays an essential role in fostering creativity, building confidence, enhancing problem-solving skills, and inspiring students to explore the possibilities of digital artistry, ultimately contributing to a positive and enriching educational experience.

These quotes reflect the positive impact of teacher support on students' learning experiences, creativity, problem-solving skills, confidence, and motivation in utilizing technology for art projects.

Student support feedback included:

- "I do like having her there to give tips. I do work at home, so hearing her help the kids that don't really understand sometimes helps with the problems I have at home. They also mess up more, so I learn easier ways to make changes."
- "The check-ins truly kept me on track with my work, along with the feedback rubrics. This would allow me to make constructive changes to improve my overall project."
- "Yes, it did; it made it easier to make my vision come to life quicker."
- "The feedback and check-ins gave me a way to improve my project on top of what I'd already done."
- "Regular check-ins make me more motivated to finish my projects, and rubrics help me understand things I am confused about on the project."
- "It allowed me to feel more confident when I work on my projects."

These quotes reflect the positive impact of teacher support on students' learning experiences, creativity, problem-solving skills, confidence, and motivation in utilizing technology for art projects.

Students in figure 15 above gave an average response of nearly 8 out of 10 regarding confidence in experimenting with digital techniques after completing the project. This suggests that experience and teacher training instill confidence in students, allowing them to explore and implement various digital tools and techniques in art education.

A two-tailed t-test was performed on the perceptions survey vs. reflections survey result for the following: Perceptions 1: "Is this class set up in a way that makes you want to try new things and take chances when using digital tools for art? 0 equals No, 5 equals Sometimes, 10 equals yes". and Reflection 1: "How comfortable did you feel using Adobe software and other digital tools throughout the project? 10 being very comfortable." to determine if a significant difference existed between the two perspectives. Question 1 ($M = 8.21$, $SD = 1.96$) and Perceptions Question 2 ($M = 7.78$, $SD = 1.73$), $t(17)$, $p = 0.49$.

The data suggests that students, on average, expressed a high level of confidence in experimenting with digital techniques after completing the project, with an average response of nearly 8 out of 10. This indicates that their experience using digital tools, combined with effective teacher training, has positively influenced their confidence levels in exploring and implementing various digital techniques in art education.

The p-value of 0.49, which is higher than the typical significance level of 0.05, shows that the results of the t-test show that there was no significant difference between the two perspectives (perceptions and reflections) regarding the arrangement of the class and the comfort level of students using digital tools. This suggests that students' perceptions of the class setup align closely with their actual comfort levels in using digital tools, implying that the class environment effectively supports their experimentation and learning with digital techniques in art education.

Chapter 5 : Discussion and Conclusions

Summary

The study's goal was to investigate the effects of technology on students' creative process, originality, and engagement in a digital art classroom. This study indicates that the integration of technology in the art classroom presents both benefits and challenges for digital creativity. The findings of the study revealed that students perceive that while technology offers new opportunities for artistic expression and innovative learning experiences, it also introduces challenges such as technical issues and digital distractions. This research highlighted the importance of implementing best practices, like guided practice, to encourage confidence in the creative process when creating digital art classrooms. These best practices will help to maximize the benefits of technology while allowing time for skill building and practice to address its drawbacks. The suggested approaches that students perceived as beneficial include integrating guided practice into the lesson framework, providing ample time for students to receive support and practice to build confidence, and fostering critical thinking through the creative process.

Discussion & Conclusions

The results of incorporating technology into the art classroom provide important Student perspectives on how technology influences students' creative process, originality, and engagement, How digital tools (e.g., Adobe software) affect students' engagement and learning experiences and the role teachers content knowledge and professional development play in effectively integrating technology into the art curriculum. The students perspective gathered in the research supported the idea that integrating technology provides both benefits and challenges for digital creativity. The reflection surveys demonstrated that, while programs like Adobe

Photoshop and Illustrator provide new opportunities for artistic expression and creative learning experiences, they also introduce challenges such as technical issues and digital distractions.

The results demonstrate that through the use of technology, students can explore new artistic avenues that help to develop a stronger creative process, originality, and engagement. Students' interactions with technology encourage' creativity by providing various tools and techniques for self-expression, but it also creates challenges in maintaining originality. The impact of technology on student engagement reveals both positive aspects, It provides access to interactive and creative platforms that embrace and encourage creative and collaborative opportunities for reviews and feedback during the creative process. The study emphasizes the importance of implementing best practices to promote a strong creative process in the art classroom, including guided practice, effective use of digital art tools, technical support, and critical thinking skills to manage distraction and increase confidence. Furthermore, it provides insights into the complexities of technology's impact on students' creativity in a practical setting.

The study showed digital tools had both positive and negative effects on students' engagement and learning experiences. For example, Adobe software, in particular, enabled advanced digital art creation while also posing technical and resource-related challenges. Students perceived teacher guidance and content knowledge as increasing confidence and minimizing the fear of failure. However, further research that compares more diverse groups of teachers would be needed to dig deeper into this topic. Students perceived adequate technical support and guidance as critical for maximizing the positive impact of advanced digital tools such as Adobe software on students' engagement and learning experiences. They also provided valuable insights into the complexities of using digital tools in art education.

Generalizations or Main Takeaways

A main takeaway is how Adobe software, affects students engagement and learning experiences in art classes. The study found that these tools allow students to experiment with complex design techniques and tools throughout the creative process. The study emphasized the importance of providing adequate technical support and guidance to mitigate potential disadvantages throughout the creative process and maximize the positive impact of digital tools on student engagement and learning outcomes (Bereczki & Kárpáti, 2021).

Another takeaway is the critical role of teacher training and professional development in providing educators with the necessary skills and knowledge to effectively integrate technology into the digital art curriculum. The study found that students perceive teacher experience level and content knowledge as having a positive impact on their confidence while using technology. This knowledge was perceived as improving the students confidence and creating a level of trust in the creative process.

These takeaways highlight the importance of teacher training and professional development in helping educators effectively integrate technology into the art curriculum. These insights can help in making better decisions and interventions to improve the use of digital tools and provide support to students and educators in art education.

Implications of the results

The findings of this study have important implications for the field of art education, particularly in the integration of technology and content relevant to the professional development of art educators. The findings highlight the importance of teacher training and ongoing professional development programs in providing educators with the necessary skills for an ever changing

digital landscape and pedagogical strategies for effectively incorporating technology into the art curriculum.

Integration with Constructivism

The results are consistent with constructivist theory, which emphasizes learning as an active, contextual, and social process. By investigating the impact of teacher content knowledge and professional development on technology integration, the study emphasized the importance of providing educators with the tools and knowledge they need to facilitate active and contextual learning experiences for students using technology (Bereczki & Kárpáti, 2021). Constructivism proposes that students build their understanding and knowledge through experiences and reflections, emphasizing the educator's role as a facilitator of this active learning process (Tsortanidou et al., 2019). The study's findings highlight the importance of comprehensive content knowledge and well planned guided practice to enable educators to facilitate rich, experiential learning opportunities by seamlessly incorporating digital tools into art instruction.

Constructivism research provides a theoretical framework for understanding how students interact with technology in the art classroom (Tomljenović & Vorkapić, 2020), making it relevant to the research results. During guided practice, the teacher leads students through their learning experiences, demos, practice, tutorials, and projects, empowering them to actively engage with technology and take control of their learning and creative processes. This research supports the existing research of Tomljenović and Vorkapić (2020), showing that allowing students to interact with digital tools in a constructivist setting can boost their confidence, creativity, and originality.

Several aspects of this research supported this approach, which emphasizes student-centered learning and proposes that knowledge is built through active exploration and

engagement with new digital experiences. In the context of digital art education, this means that students will benefit the most from an environment that allows them to use technology creatively, experiment with different digital tools and techniques, and reflect on their creative process. This can result in a better understanding of how technology can improve artistic creativity and education (Tsortanidou et al., 2019). Tomljenović & Vorkapić, (2020) research aligns with this new study, which stresses the importance of the teacher's role in recognizing the diversity of student cognitive and visual types and adapting to the students' individual needs and perceptions. A more personalized and effective teaching strategy will improve student outcomes in understanding and interpreting visual arts content.

The findings are not only consistent with Constructivism's theoretical framework, but they also resonate with and reinforce key findings in relevant literature. By emphasizing the importance of teacher training, content knowledge, professional development, and ongoing student support, during the creative process, the study contributes to a better understanding of how to empower educators to effectively integrate technology into the art curriculum, which will improve students' overall learning experiences.

Relate to literature review

The results of students' perspectives and reflection surveys show both consistency and inconsistency with the findings of the studies reported in the literature cited. Previous research has shown that advanced digital tools, such as Adobe software, have an impact on students' engagement and learning experiences in art classes (Zhu, 2020). The literature also acknowledges the potential of advanced digital tools to foster exploration and creativity, while emphasizing the challenges of technical proficiency and resource availability. The survey results

point to the need for adequate technical support and guidance for students during the guided study, which is consistent with previous research recommendations.

The pivotal role of teacher training and professional development, emphasized in the survey results, corresponds with the literature's emphasis on the importance of equipping educators with the skills and knowledge to integrate technology effectively into the art curriculum. Consistently, both the survey findings and the literature underscore the value of tailored professional development initiatives specifically designed for art educators, recognizing the critical need for targeted approaches to empower educators in leveraging technology to enhance the art learning experience.

While the survey results are largely consistent with the literature, there are some discrepancies regarding the depth of impact. The literature cited may provide broader frameworks and general recommendations for technology integration and educator training, whereas the survey results provide specific insights into the difficulties and successes encountered by students and educators in the context of art education. These nuanced perspectives may not be fully captured in the larger literature, emphasizing the survey results' distinct and valuable contribution to the existing body of knowledge.

The survey results and the literature cited are similar, indicating that the research findings are valid and useful. At the same time, the various points of view expressed in the surveys add depth and specificity to our understanding of how technology is used in art education and how teachers are prepared to use it.

Theoretical Positions

This research from the students' perspectives and reflection surveys both align with and differ from the existing theoretical positions and literature findings. First, the survey results and

the literature cited confirm the importance of digital tools, such as Adobe software, in influencing students' engagement and learning experiences in art classes. These findings are consistent with the existing literature by Zhu (2020), which acknowledges the potential of advanced digital tools to provide opportunities for exploration and creativity while highlighting the challenges associated with technical proficiency and resource accessibility.

The survey results emphasize the importance of teacher training and professional development, which corresponds to the literature's emphasis on providing educators with the skills and knowledge needed to effectively integrate technology into the art curriculum. Both survey results and academic literature highlight the critical need for targeted approaches to empower educators in leveraging technology to improve the art learning experience, which emphasizes the importance of tailored professional development initiatives specifically created for art educators.

However, there are some discrepancies regarding the depth of impact. Strycker's (2020) literature may provide broader frameworks and general recommendations for technology integration and educator training, whereas the survey results provide specific insights into the challenges and successes that students and educators face in the context of art education. The survey results add something new and useful to what is already known because they include nuanced points of view that may not be fully covered in other research. As a result, while the findings complement existing theoretical positions, they also provide specific insights that add to our understanding of technology integration and educator training in the field of art education.

Limitations

This study has several potential limitations that should be considered. One limitation is the sample size. The sample size for the study was only 19 students, which means that the results

may not be applicable to a larger group of people. Furthermore, the potential limitations of the sample's composition, including the demographic characteristics of the participants, should also be considered. The results may not accurately reflect a larger and more diverse population because this sample was mostly made up of male students. If the study's sample was predominantly from a specific demographic or geographical area, the results' applicability to a more diverse and varied population may be limited. This limitation should be considered when assessing the findings' applicability to different educational settings and cultural contexts.

Another potential limitation is the study's duration and timing of data collection. The study only looked at a short time, so the results might not show how the use of technology in art education will change or affect things in the long term. Since the data collection occurred during a specific academic year or under particular circumstances, for example, standardized testing and spring break disrupted this research, the results may not be applicable to different times or settings. If the study was conducted over a short period of time or under specific conditions, the findings may not accurately reflect the long-term and evolving nature of technology integration in art education. It is critical to recognize that the findings may be context-specific and may not necessarily apply to other time periods or educational settings.

The study's reliance on only student surveys and reflections may limit its ability to capture the full complexity of student and educator experiences and perspectives. It is critical to recognize these potential limitations because they may influence the interpretation and applicability of the study's results. Future research should aim to address these limitations by using larger and more diverse samples, extending the study's duration, incorporating different research methodologies, and accounting for potential biases in the data collection process.

Considering these limitations, it is crucial to approach the interpretation and application of the study's findings with an awareness of their specific context and scope. The limitations identified may limit the results' generalizability to various populations and educational settings, even though they offer insightful information about technology integration and educator training in art education.

Moving forward, future research in the field of art education should aim to address these limitations by employing more robust and diverse samples, extending the duration and scope of studies, and incorporating varied research methodologies. By doing so, the field can strive to develop a more comprehensive and generalizable understanding of the impact of technology on art education and the effectiveness of tailored professional development initiatives for art educators.

Implications for modifications

Based on this research, there are several implications for modifications or new initiatives in theory, practice, and policy within the field of art education. Firstly, the study findings emphasize the need for a more comprehensive and nuanced approach to technology integration and educator training. While existing literature provides broader frameworks and recommendations, the specific insights from the survey results highlight the need to tailor professional development initiatives for art educators to address the challenges and successes experienced in the context of art education. This suggests that a one-size-fits-all approach may not be sufficient and that targeted and tailored support is essential to effectively integrating technology into art learning.

The identified limitations related to sample size, composition, and research methodology signal the need for modifications in future research and policy. To address the potential limitation

of sample representation, future studies should strive to utilize larger and more diverse samples to ensure the generalizability of findings to a broader population of students and educators in art education.

In terms of practice, the study findings highlight the importance of taking into account the specific context and scope of the results. Art educators and policymakers should exercise caution when applying the findings to various educational settings and cultural contexts, keeping in mind the study's potential limitations on generalizability. This emphasizes the importance of taking a critical and context-specific approach to implementing technology integration and educator training initiatives in art education.

Based on these implications, future initiatives should prioritize tailored and targeted professional development for art educators, use more robust and diverse research methodologies, and take a critical and context-specific approach to integrating technology into art education. By incorporating this specific guidance based on study findings, art education can improve its theoretical, practical, and policy approaches to technology integration and educator training.

Proposed Research

The proposed research is critical for addressing the identified limitations and gaps in the existing literature on technology integration and educator training in art education. This study has highlighted the need for a more comprehensive and nuanced approach to understanding technology's impact on art education, as well as the effectiveness of tailored professional development initiatives for art educators. As a result, the proposed research is required to expand on the existing knowledge base and provide a more general understanding of the subject matter.

The form of the proposed research should involve employing robust research methodologies that encompass a mix of quantitative and qualitative approaches. By incorporating surveys, interviews, and observations, the research can capture the full complexity of experiences and perspectives within art education. Additionally, the research should aim to utilize larger and more diverse samples to ensure the generalizability of findings to a broader population of students and educators in art education. This will address the limitations related to sample representation outlined in this research.

Moreover, the proposed research should take a longitudinal approach to studying the impact of technology on art education. By extending the duration and scope of the study, the research can capture the long-term effects and changes in practice, thereby addressing the limitations related to the duration and timing of data collection highlighted in this research.

In conclusion, the proposed research is crucial to advancing the field of art education by addressing the limitations identified in this research. By employing robust research methodologies, utilizing diverse samples, and taking a longitudinal approach, the proposed research can provide valuable insights into technology integration and educator training in art education and contribute to the development of more tailored and effective initiatives in theory, practice, and policy.

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Appendix A

CONSENT TO PARTICIPATE IN RESEARCH

Confidential

Technology in the Art Classroom: Drawbacks and Best Practices for Digital Creativity.

Heather Cox

Elana Betts

University of the Arts

hcox@uarts.edu

ebetts@uarts.edu

You are receiving this consent form because you were requested to participate in this research project. The choice to participate in this project is voluntary, and you may choose to withdraw at any time with no penalty. Please review this consent form in its entirety prior to agreeing to participate. Should you have any questions or concerns, contact the Principal Investigator at Heather Cox at hcox@uarts.edu or the Research Compliance Coordinator at (610)-660-1298 or irbadadministrator@sju.edu.

Purpose:

The purpose of this research is to get a better understanding of how digital tools affect students' ability to be creative. The main goal of my research is to give useful advice on how to make the best use of digital tools in art classes so that both students and teachers can learn in a fun and interesting way.

Procedures:

If you choose to participate in this research project, you will be asked to participate in surveys and class observations in class during the weeks of March and April 2024.

Duration:

Given the above procedures, it is estimated that participation in this research will take place during class during March and April of 2024.

Location:

Ocean City High School Digital art Classes in A125

Inclusion and Exclusion Criteria: Participants for this study are being recruited from students in digital art classes at Ocean City High School grades 9-12, ages 14-18.

Risks & Benefits:

As with any study, you should be aware that unforeseen problems may occur, however, the likelihood of any serious problem is believed to be low. Your participation is voluntary, and you may refuse to participate or stop your participation at any time for any reason without penalty. You may choose to skip a question or terminate participation at any time.

Use of Research Results:

For my final research project, I am looking for several students to participate in my research. I am doing a research study to get a better understanding of how digital tools affect students' ability to be creative. The main goal of my research is to give useful advice on how to make

the best use of digital tools in art classes so that both students and teachers can learn in a fun and interesting way.

Confidentiality**Online Survey:**

When using an online survey for students: The survey number and your email address will be kept online using OCHS security and encryption. So that you are listed as having taken the survey, even if you later decide not to or stop taking the survey at any time. Your survey answers will be kept on a different UARTs server, but they will not contain any information that could be used to identify you. Since your name or student ID cannot be linked to your responses or choice to participate, your participation choice and responses are completely confidential

Institutional Review Board Approval:

This research study has been approved by the Saint Joseph's University Institutional Review Board (IRB) for the Protection of Human Subjects in Research. If you believe that there is an infringement upon your rights as a participant in this research, you may contact the Research Compliance Coordinator at irbadministrator@sju.edu.

Name of Research Participant_____

Guardian Name_____

Subject's Agreement

I have read the information provided above and voluntarily agree to participate in this research study. I understand that I will be given a copy of this consent form.

Date_____

Signature of Research Participant_____

Appendix B

Assent Form

Project Title: Technology in the Art Classroom: Drawbacks and Best Practices for Digital Creativity.

Principal Investigator: *Heather Cox
Art Education
University of the Arts
320 S Broad Street
Philadelphia, PA 19102
800-616-ARTS*

Faculty Advisor: *Elana Betts, MA,CSP, DEd
Art Education
University of the Arts
320 S Broad Street
Philadelphia, PA 19102
800-616-ARTS*

Hello,

I am currently attending the University of the Arts, where I am working toward my MEd in Educational Program Design: Visual Arts, MEd. For my final research project, I am looking for several students to participate in my research. I am doing a research study to get a better understanding of how digital tools affect students' ability to be creative. The main goal of my research is to give useful advice on how to make the best use of digital tools in art classes so that both students and teachers can learn in a fun and interesting way.

If you decide that you want to be part of this study, you will be asked to participate in surveys and class observations in class during the weeks of March and April 2024.

If you do not want to be in this research study, you do not have to. You may simply opt out of participating in the surveys.

When I am finished with this study, I will write a report about what was learned for a presentation in a college classroom. This report will not include your name or that you were in the study.

You do not have to be in this study if you do not want to be. If you decide to stop after you begin, that's okay too.

The University of the Arts has partnered with Saint Joseph's University for research projects, and If you have any questions about your rights as a participant in this research, you may contact the Saint Joseph's University Institutional Review Board (IRB). You can reach the Research Compliance Coordinator, at irb@sju.edu.

If you decide you want to be in this study, please print and sign your name.

I, (print your name here)_____, want to be in this research study.

Sign your name here

Date

Appendix C

Email to Parents

Subject: Invitation to Participate in Innovative Digital Art Research Study

Dear Students and Parents,

I hope this message finds you well. My name is Heather Cox, and I am currently pursuing my MEd in Educational Program Design: Visual Arts at the University of the Arts. As part of my final research project, I will be looking for some of my digital arts students to participate in an action research study exploring the impact of digital tools on creativity in art classes.

Research Objective:

The primary goal of this study is to gain a deeper understanding of how digital tools influence students' creativity in art education. By utilizing well-structured technologies such as Adobe software, the research aims to provide valuable insights and recommendations for enhancing the use of digital tools in art classrooms, making the learning experience both enjoyable and engaging.

Research Details:

- Duration: March and April
- Methodology: Surveys, tests, observations, guided exploratory classes
- Key Focus: Encouraging creativity and originality while reducing fear of failure
- Tools Used: Adobe software and a questionnaire
- Research will not impact the timeline of the class or projects they complete

How to participate:

If you prefer that your student not participate in this research study, please respond to this email by March 8th, 2024. Students will be asked in class to participate and will receive a digital consent form in class to complete, depending on their age. Their involvement will contribute significantly to the advancement of digital art education, and I am eager to embark on this journey with a group of dedicated students. If you have any questions or concerns, please do not hesitate to reach out to me.

Thank you for considering this exciting opportunity, and I look forward to your positive response.

Best regards,

Heather Cox

hcox@uarts.edu

Appendix D

Demographic Survey

<p>1* What digital art course are you currently taking?*</p> <p>Description (optional)</p> <p>Type or select an option</p> <p>Edit choices</p> <p>5 options in list</p>	<p>2* What is your age?*</p> <p>Description (optional)</p> <p>Type or select an option</p> <p>Edit choices</p> <p>5 options in list</p>
<p>3* What grade are you currently in?*</p> <p>Description (optional)</p> <p>Type or select an option</p> <p>Edit choices</p> <p>4 options in list</p>	<p>4* What is your gender?*</p> <p>Description (optional)</p> <p>Type or select an option</p> <p>Edit choices</p> <p>3 options in list</p>
<p>5* Your school login address @ocsdnj.org*</p> <p>Description (optional)</p> <p>name@example.com</p>	

Appendix E

Pre-Assignment Perceptions Survey

<p>1→ You school login (@ocsdnj.org)* <i>Description (optional)</i></p> <p>name@example.com</p>	<p>4→ Is your creativity better or worse when you use technology?*</p> <p><i>Description (optional)</i></p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>Worse Neither Better</p>
<p>3→ Does the use of digital tools make it harder to be creative or does it make it easier?*</p> <p><i>Description (optional)</i></p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>Harder Neither Easier</p>	<p>4→ Is your creativity better or worse when you use technology?*</p> <p><i>Description (optional)</i></p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>Worse Neither Better</p>
<p>5→ Does your teacher talk about the problems that could happen because of technology and try to keep them to a minimum?*</p> <p><i>Description (optional)</i></p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>No Somewhat Yes</p>	<p>6→ When you use technology, do you feel like your teacher guides you and helps you find your own unique ways of thinking?*</p> <p><i>Description (optional)</i></p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>No Somewhat Yes</p>
<p>7→ Is this class set up in a way that makes you want to try new things and take chances when using digital tools for art?*</p> <p><i>Description (optional)</i></p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>No Sometimes Yes</p>	<p>8→ Do you feel stressed when you use computer tools to make art?*</p> <p><i>Description (optional)</i></p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>No Somewhat Yes</p>

Appendix E

Pre-Assignment Perceptions Survey

<p>9 → How often do you think about how you used digital tools and how your designs could have been better after you are done? *</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>Never Sometime Often</p>	<p>10 → Do you think that your smart phone keeps you from focusing on your art? *</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>No Sometimes Yes</p>
<p>11 → Do you think this class makes you more creative or shows you how to make work that is limited and not original? *</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>Not Original Both Creative</p>	<p>12 → Do you feel like you have to rush through this class's projects and work? *</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>No Sometimes Yes</p>
<p>13 → Is there enough time in the project for you to come up with a creative solution? *</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>No Somewhat Yes</p>	<p>14 → Do you think this class is more about technology or about how to be creative? *</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>Technology Both Creative</p>
<p>15 → Do you think there are clear rules and standards for how to use technology in this class? *</p> <p>No Somewhat Yes</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>No Somewhat Yes</p>	<p>16 → Do the rules help to make the classroom a focused and useful place to learn? *</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>No Somewhat Yes</p>

Appendix E

Pre-Assignment Perceptions Survey

<p>17 → Do digital tools like cell phones and the internet make it harder for you to concentrate on your art?*</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>No Sometimes Yes</p>	<p>18 → Are there rules in this class that keep digital distractions to a minimum while still using technology to help teach art?*</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>No Somewhat Yes</p>
<p>19 → Does using digital tools make you less afraid of failing or more afraid of it?*</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>Less Neither More</p>	<p>20 → Do you feel like this class is a safe place where you can try new things and not worry about making mistakes?*</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>No Somewhat Yes</p>

Appendix F

Reflection Survey

<p>1* Your School login (@ocsdnj.org)</p> <p>Description (optional)</p> <p>name@example.com</p>	<p>2* What project are you reflecting on?</p> <p>Description (optional)</p> <p>Type or select an option</p> <p>Edit choices</p> <p>11 options in list</p>
<p>3* How would you rate your overall experience with the digital tools used in this project on a scale of 1 to 10, with 10 being the most positive?</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>Anonymous</p>	<p>4* Did the integration of digital tools enhance your creativity and originality in this project? Please explain.</p> <p>Description (optional)</p> <p>Type your answer here...</p> <p>Rich & < Bold & Italic & Underline</p> <p>OK ✓ Done Enter</p>
<p>5* Did the guided exploration during class help you understand and utilize digital tools for artistic expression?</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>No Somewhat Yes</p>	<p>6* How comfortable did you feel using Adobe software and other digital tools throughout the project? 10 being very comfortable.</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>Very Comfortable</p>
<p>7* Did the regular check-ins and feedback rubrics contribute to your learning experience and the development of artistic skills? Please provide specific examples</p> <p>Description (optional)</p> <p>Type your answer here...</p> <p>Rich & < Bold & Italic & Underline</p> <p>OK ✓ Done Enter</p>	<p>8* On a scale of 1 to 10, how confident do you feel in experimenting with different digital techniques after completing this project?</p> <p>Description (optional)</p> <p>0 1 2 3 4 5 6 7 8 9 10</p> <p>Not Confident Confident</p>

Appendix F

Reflection Survey

<p>9+ In what ways did digital tools and technology help alleviate any fear of failing or making mistakes in your artwork? <i>Description (optional)</i></p> <p>Type your answer here...</p> <p>With 6 - Enter # to make a line break</p> <p><input type="button" value="OK"/> <input type="button" value="cancel"/></p>	<p>10+ Were there any challenges you faced when working with digital tools in this project? If so, please describe. <i>Description (optional)</i></p> <p>Type your answer here...</p> <p>With 6 - Enter # to make a line break</p> <p><input type="button" value="OK"/> <input type="button" value="cancel"/></p>
<p>11+ What specific aspects of the digital tools or approach do you think could be improved to enhance the learning experience? <i>Description (optional)</i></p> <p>Choose as many as you like</p> <p><input type="button" value="More Examples"/> <input type="button" value="More time"/> <input type="button" value="More Demos"/> <input type="button" value="More practice"/> <input type="button" value="Less Demos"/> <input type="button" value="Less Practice"/> <input type="button" value="Less Time"/></p> <p><input type="button" value="Add choice"/></p>	<p>12+ How did this project using digital tools contribute to your artistic growth and development? <i>Description (optional)</i></p> <p>Type your answer here...</p> <p>With 6 - Enter # to make a line break</p> <p><input type="button" value="OK"/> <input type="button" value="cancel"/></p>
<p>13+ Were there any specific moments or activities during the project that you found particularly inspiring or beneficial to your creative process? No Somewhat Yes</p> <p><input type="button" value="Demo"/> <input type="button" value="Examples"/> <input type="button" value="Practice/Classwork"/> <input type="button" value="The process of creating the project"/> <input type="button" value="Videos + Reviews"/></p> <p><input type="button" value="Add choice"/></p>	<p>14+ On a scale of 1-10, 10 is the most confident. How confident and less afraid of failing in your artistic endeavors do you feel after completing this project with digital tools? <i>Description (optional)</i></p> <p><input type="button" value="0"/> <input type="button" value="1"/> <input type="button" value="2"/> <input type="button" value="3"/> <input type="button" value="4"/> <input type="button" value="5"/> <input type="button" value="6"/> <input type="button" value="7"/> <input type="button" value="8"/> <input type="button" value="9"/> <input type="button" value="10"/></p> <p>Confident</p>

Appendix G

Check in Checklist

Digital Art Project Daily Check-In Checklist

This checklist will be used during check ins with students. It will help the instructor understand how a student's creative process is developing, assess any struggles they may have, and help the instructor guide each individual student.

Student Information:

Name:

Date:

Project Overview:

Project Title:

Brief Description of the Project:

Concept Clarity:

- ☐ Does the student have a clear understanding of the project concept?
- ☐ Is the concept well-developed and thought out?
- Design Development:
 - ☐ Has the student made progress in developing their design?
 - ☐ Is the design aligned with the project requirements?

Time Management:

- Use of Time:
 - ☐ Is the student utilizing their time effectively?
 - ☐ Are they on track with the project timeline?
- Task Planning:
 - ☐ Does the student have a daily task plan for the project?
 - ☐ Are they able to prioritize tasks appropriately?

Technical Proficiency:

- Software Skills:
 - ☐ Is the student proficient in using the required software/tools?
 - ☐ Are there any technical challenges they need assistance with?
- Artistic Techniques:
 - ☐ Are they employing a variety of artistic techniques effectively?
 - ☐ Do they need guidance on specific techniques?

Understanding and Reflection:

- Understanding Concepts:
 - ☐ Can the student articulate the key concepts behind their project?

- ☐ Are they able to explain their design choices?
- Reflection on Progress:
 - ☐ Has the student reflected on their progress so far?
 - ☐ Are there any challenges or concerns they would like to discuss?

Collaboration and Communication:

- Collaboration:
 - ☐ Is the student effectively collaborating with peers, if applicable?
 - ☐ Are they seeking and providing constructive feedback?

Additional Notes:

- Any Challenges:
 - ☐ Note any specific challenges the student is facing.
- Instructor Guidance:
 - ☐ Specify any guidance or support provided during the check-in.

Next Steps:

- Action Items:
 - ☐ Identify specific action items or goals for the next check-in.

Appendix H**Curriculum Vitae***Heather Cox*RESUME

JOB EXPERIENCE

- May 2014 - Present - Art Teacher
Ocean City High School, Ocean City, NJ
- April 2012 - June 2013 - Maternity Leave Replacement
Barnegat High School, Barnegat, NJ
- Spring 2011 - 2012 - Graphic Designer
The Milton & Betty Katz JCC, Margate, NJ
- Fall 2006 - Spring 2010 - Art Teacher, Yearbook & Photo Club Adviser
Castle View High School, Castle Rock, CO
- Fall 2003 - 2005 - Art Teacher
Ocean City High School, NJ
- Fall 1999 - Present - Freelance Graphic Designer/Photographer
Clients include: J&J Snack Foods, The Wiser Agency, Atlantic City Housing Authority, Heather Cox Photography and The Accent Gallery.

TECHNICAL & SOFTWARE SKILLS

Skilled in computer applications including (Mac & PC):

- Adobe PhotoShop
- Adobe Illustrator
- Adobe InDesign
- Adobe After Effects
- Adobe Dreamweaver
- Adobe Flash
- Microsoft Office

EDUCATION

- Photography, BFA - May 1999
University of the Arts, PA
- Communication, BA - November 2006
Thomas Edison State College, NJ
- Teacher in Residence Program - April 2009
Metro State College, CO
- Educational Program Design: Visual Arts, MEd- May 2024
University of the Arts, PA

AWARDS & ACCOMPLISHMENTS

- 2002 Atlantic City Housing Authority Annual Report
Award of Distinction, 2002 Communicator Awards
- 2002 Wiser Agency Holiday Promotion
Published in Paper Graphics 2 by Catharine Fishel
- Nominated Teacher of the Year 2005
- Apple Award Nominee 2007, 2009 & 2010