International Journal of Knowledge, Innovation and Entrepreneurship
Volume 9 No. 2, 2021, pp. 32—49
Print: ISSN 2054-3662 | Online: ISSN 2054-3670

Teaching Creative Thinking through Art to promote Artistic Gains: An Experiential Learning Inquiry

LINDSAY ESOLA & GRAEME SULLIVAN
The Pennsylvania State University, USA

Abstract

Purpose: The Apple Project is a teaching intervention designed to adapt and implement a constructivist theory to assess whether students were able to enhance their creative thinking capabilities by engaging in a series of creative tasks.

Design/Methodology: In this work, creativity is defined as a way of thinking that produces an intentional outcome that is novel, useful and insightful. The Apple Project is designed to incrementally build creative skills through scaffolding over a series of experiential lessons. The project is based on deliberate, spontaneous and flow definitions of creativity as well as concepts of breaking, blending and bending. The project takes into account the serial order effect by mixing media, style, and elements of design. Creative thinking was measured by the original ideas and successful execution of the students anything apples and subsequent backgrounds to all 50 apples. Artistic growth was analyzed through evaluating artwork before, during and after the Apple Project. Finally, self-efficacy was measured by a self-report submitted at the end of the course.

Findings: Significant artistic growth was demonstrated, increased self-efficacy was reported, and enhanced creative thinking was observed over the course of the project. Students were able to draw, paint and create polished, original artwork without specified instruction. Artistic gains, increased self-efficacy and enhanced creative thinking appeared positively correlated. The combination of artistic gains through scaffolding and increased self-efficacy through experiential learning may lead to enhanced creative thinking skills.

Originality: This project offers an insight into practical application of creative thinking by an art educator trained in psychology and neuroscience. This lesson is carefully scaffolded to guide students into creative thinking by slowly raising the level of ability required to complete the tasks as well as coming up with novel ideas for new artwork.

Limitations: Data for this study was collected over three semesters that the researcher taught during an assistantship at Penn State. The students were all prospective Elementary Teachers with various exposure to the arts and when they were absent on the instructional days, it was difficult to recreate the lesson.

Practical Implementations: This is a lesson plan that educators can use in the classroom in order to not only enhance artistic ability, but also to foster creative thinking.

Keywords: Creativity, Experiential Learning, Self-Efficacy, Neuroeducation, Teaching Methodology, Artistic Gains

Introduction

"Every child is an artist. The problem is how to remain an artist once he grows up."

Pablo Piccaso

This study is inspired by Elliot Eisner's suggestion that "the promotion of artistry in teaching" is more likely to take place "by finding out what one is doing and by imagining how it might be made even better" (2002, p.49). However, classroom art teachers face difficulties pursuing Eisner's vision given the current paradigm where the focus on accountability and measures of student comprehension leads teachers to seek verifiable facts, measurable outcomes, and standardized procedures (Milbrandt et al. 2004). In exemplary constructivist practices in art education, the teacher structures, interacts, suggests, observes, and responds to students Thompson, 2015), yet teachers still find themselves at a dualism of exploration and rigor. A 2011 report from the President's Committee on the Arts and the Humanities sounds the same note: "due to budget constraints and emphasis on the subjects of high stakes testing, arts instruction in schools is on a downward trend" (PCAH, 2011, p. vi). In schools across the country, opportunities for students to participate in high-quality arts instruction and activities are diminishing amid shifting priorities and budget cuts" (Ruppert, 2006, p.1). For many, the consequence of this emphasis on academic accountability severely underestimates the impact of creativity as a crucial component of learning and development. In this study, creativity is defined as a way of thinking that produces an intentional outcome that is novel, useful and insightful. Although many researchers argue over whether creativity is method or magic, an innate structure or a rare ability, a cognitive process or a product, most researchers agree that "creativity is the natural propensity of human being-ness" and that it can be "either enhanced or stifled" (Piirto, 1998, p. 41). Creativity has long been a topic of research across social, cultural, scientific and educational disciplines (Csikszentmihalyi, 1996; Guilford, 1950; Gruber, 1981; Lowenfeld, 1947; Wallas, 1926).

Research Question

Given that constructivist framework is a means of guiding artistic development, *will teaching for artistic gains as well as self-efficacy result in enhanced creative thinking?*

Theoretical Background

"There are only two lasting bequests we can hope to give our children. One of these is roots, the other wings" – Goethe

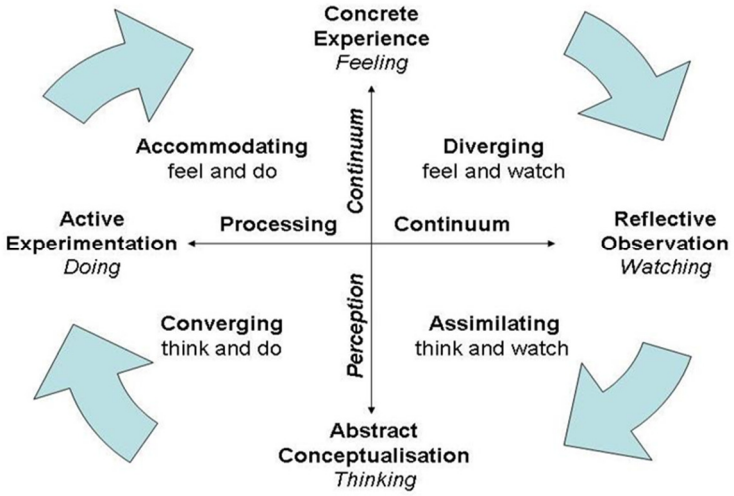
Children are born with an innate ability for creativity, yet as they age, creative ability seems to diminish. By implementing the constructivist teaching methods inspired by John Dewey and others, the critical elements of teaching are utilized in a more child centered approach to learning. Experiential learning combines disciplines in meaningful learning activities that are related to authentic situations (Dewey, 1934). Experiential Learning Theory is "the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 41). Goldberg (1997) feels that when "learning through the arts, students are engaging with ideas rather than reporting them" (p. 14).

It is suggested that a way of enhancing creativity, as well as fostering growth in artistic skill is through collaboration with adults using a more teacher-centered methodology. Prior research in this area suggests that both an increase in skill as well as an enhancement of creative thinking occurs when the child is supported within their

Zone of Proximal Development. By moving just outside what the child is able to do, they are willing to grasp the concepts and implement new techniques, hence growing in their overall ability.

Children will develop artistically on their own through certain stages (Feldman, 1980), but this is no indication of what might be attainable with supportive guidance (Eisner, 1976). Vygotsky (1978) claimed that the only good learning was that which leads the developmental process as opposed to following behind it. Learning that occurs within the zone of proximal development advances capabilities and furthers development (Vygosky, 1978). There is a lack of empirical evidence that adult intervention has negative effects, while at the same time, there is a body of research concerning the positive effects of teacher intervention (e.g. Cooke et al., 1998; Dubin, 1947; Pariser, 1979; Pemberton & Nelson, 1987; Wilson & Wilson, 1979, 1981).

Figure 1: Kolb's Experiential Learning Model (www.open.ac.uk/blogs/openminded)



By seeing the value in both a teacher centered and child centered methodology, this author argues that a delicate balance of both styles should be implemented in order for the highest amount of growth to occur. Giving room to explore while remaining cognizant of their current level, the teacher can facilitate learning in a manner that promotes active engagement as well as heightened skills.

Students develop emotional and metacognitive responses while learning, especially in the arts where they are taught to see mistakes as opportunities instead of deficiencies that can be transferred into novel contexts. According to students, arts integration sets conditions to fulfill this primary need for a sense of competency (Immordino-Yang, 2015). It may be possible that through the arts, students could potentially enhance their self-efficacy, all while learning to grow and develop their own unique, artistic ability. It is widely believed that creativity is fostered by a warm, supportive, nurturing, and trustworthy environment conducive to self-actualization (Maslow, 1971; Rogers, 1959) and evidence exists that creativity can enhance one's sense of self (Garailordobil & Berrueco, 2011; MacKinnon, 1962). Self-efficacy is described as the confidence people have in their ability to do certain tasks (Jordan & Carden, 2017), and has become an important line of investigation in educational research (Alvarez-Huerta, & Larrea, & Muela, & Vitoria 2019).

Self-efficacy consists of an individual's confidence in his or her ability to effectively engage in behaviors towards desired goals (Bandura, 1997). There is increasing

attention given to this construct in educational research (Van Dinther et al. 2011) and studies have confirmed the relationship between student self-efficacy and academic achievement (Bowman, Miller, Woosley, Maxwell, & Kolze, 2019). For Tierney and Farmer (2002), self-efficacy is defined as the confidence in one's ability to produce creative results. This relatively recent topic, has revealed significant associations between creative self-efficacy and creativity outcomes in education and in other contexts (Beghetto, 2006; Farmer & Tierney, 2017; Jaussi, Randel, & Dionne, 2007; Shin & Zhou, 2007). Believing in one's creative self is considered important to act on in order to reveal creative potential. Researchers suggest that creative behavior is a matter of "agentic" action (Beghetto & Karwowski, 2017; Karwowski & Beghetto, 2018).

The suggested attention for self-efficacy and creative thinking however, are often not what is seen in public schools today. With a classroom full of students who need to pass standardized exams, efficacy and creativity just doesn't fit into the curriculum. It seems during the most critical years of a child's neural development, adults are wiring their brains for linear and convergent thinking alone. There is simply no time to allow for children to explore, play and experience life at the required pace. It can be argued, based on the collective body of existing research, that some of today's current teaching methods account for the decline in childhood creativity. As a result, both educators (Wagner, 2012) and policy makers (OECD, 2008 and Council on Competiveness, 2005) have called for schools to move away from current methods and to strive toward new instructional pedagogies that are more likely to result in enhanced creativity and self-efficacy.

Research Design

According to Eisner, the most "significant contribution that *research* in art education can make to *practice* in art education resides not primarily in the findings such research produces but in the theoretical models that are generated by researchers in their efforts to understand" (1972, p. 251). The theoretical model for this study is conceptualized on a macro to micro scale, where the macro view represents the expansive field of art education theory and patterns of historical developments, and the micro view identifies concepts used in curriculum models, and teaching and learning applications that guide classroom practice and research agendas.

The macro scale (Figure 2) illustrates three broad theoretical areas that inform the landscape of the study. These themes represent pivotal paradigms that embrace practical classroom experience and incorporate academic research trends. As described above, the legacy of learning as an experiential process continues to be relevant today, especially at a time when the autonomy of students and teachers is challenged. Teaching and learning encounters with k-12 students and pre-service education majors has raised many questions and affirmed the need to know more about how to encourage students of all ages to discover their own habits of mind and to apply them creatively and thoughtfully.

Creativity has always been generically central to art teaching practice; however, the question remains, is it possible to overcome individual and cultural stereotyping that views artistic expression and creative behavior as limited to those labeled as gifted and talented? Is it feasible to enhance individuals' confidence and self-efficacy as lifelong learners and advocates for the arts? Questions such as these are embedded in the macro landscape of education and art education and come into sharper focus when framed within the art classroom. For example, mastery of material processes, strategic and thoughtful teacher interventions, and student choice in decision making, are some of the factors researchers believe are important in building art learners' confidence and self-efficacy, which may result in important artistic gains. The presented research is designed to incrementally build creative skills through scaffolding over a series of

experiential lessons. The project is based on deliberate, spontaneous and flow definitions of creativity as well as concepts of breaking, blending and bending.

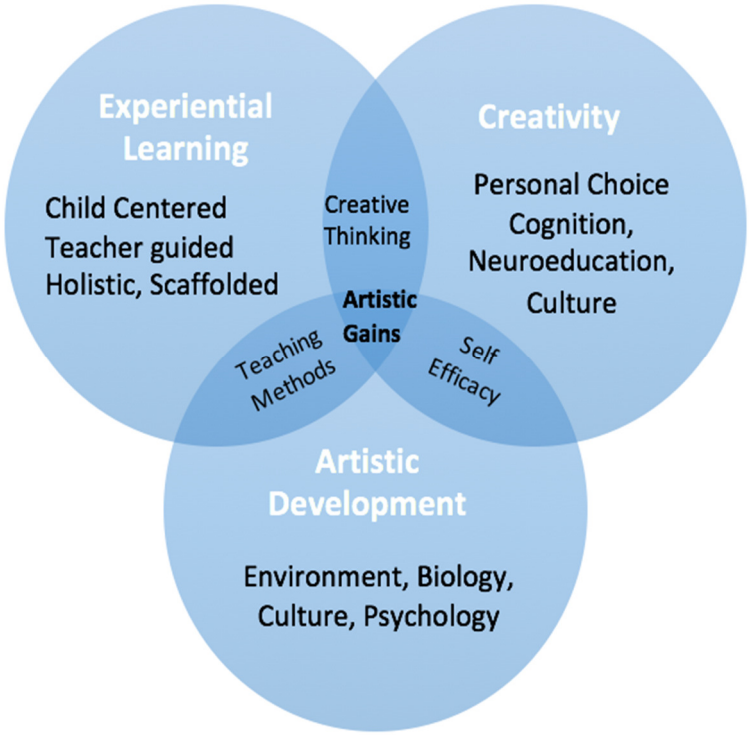


Figure 2: Theoretical Framework: Macro View

Within each of the three content themes shown in Figure 2, there are related disciplinary and scholarly threads that have had been influential at different times in the development of art education theory and practice (Efland, 1990; Stankiewicz, 2001). Figure 3 outlines how knowledge gained through theory, experience, and research serves as a means for framing educational ends. In this case, experiential learning, creativity, and self-efficacy, provide a conceptual framework for considering the experiential process of art learning, how these creative encounters can be facilitated, and the potential impact as a long-term learning outcome. Research and teaching have something in common in that both begin with stated intentions that are theoretically grounded. However, until research studies or teaching goals are put into practice the outcomes remain incomplete relationships awaiting connection. These unknown relationships are shown in Figure 3 as the broken lines assumed to link Self Efficacy, Creative Thinking and Artistic Gains. This network of relationships, will be investigated in this study.

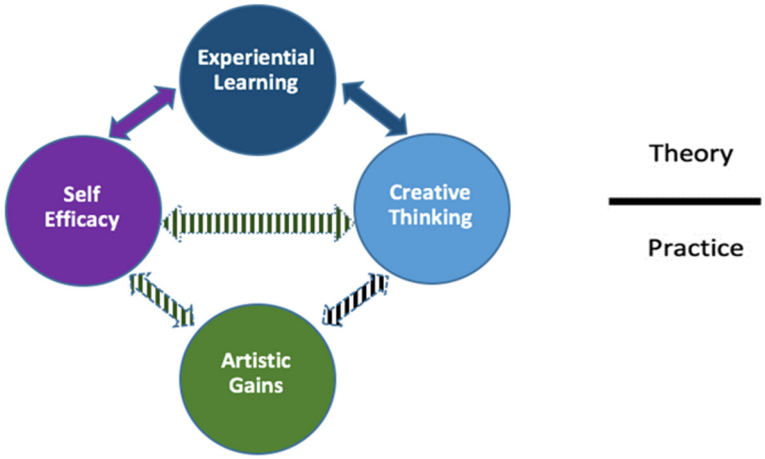


Figure 3: Conceptual Framework: Micro View

Figure 4 gives an outline of the network of key constructs and related concepts that comprise the various research networks to be explored in looking at the changing curriculum conditions and values and beliefs that inform thus study. These networks comprise four key constructs, namely, Experiential Learning, Curriculum, Creativity and Projects, or Teacher interventions. Each construct comprises a sub-set of concepts found in the related literature. As well as these content constructs, there is a methodological construct that describes the methods to be used to investigate the relevant critical analyses of the literature.

The focus of the study will be based on describing in detail, the experience the students had while engaging with this project. Their change in artistic ability and confidence will be explored, as they grew throughout the process. An examination of their artwork in the beginning of the semester, and a careful investigation of the apples they created during the project will be compared against their work at the end of the semester.

The project is a series of Apple images that allows the student to see the same object in a variety of media and techniques. The project emerged through observing that students would mimic the examples of a proposed class project. The Apple Project serves as an instructional strategy that introduces new skills and techniques while meeting the National Standards relating to the Principles of Art and Elements of Design.

This strategy of teaching various techniques using the same image will enhance individual growth as an artist, and promote personal creativity and help utilize critical thinking skills. This method can assist in implementing structure where the student focuses on learning the technique without becoming distracted by the image itself. At the end of the unit, the student will have created a book of reference exhibiting all the techniques covered in this project, as well as showcasing their own individualized work.

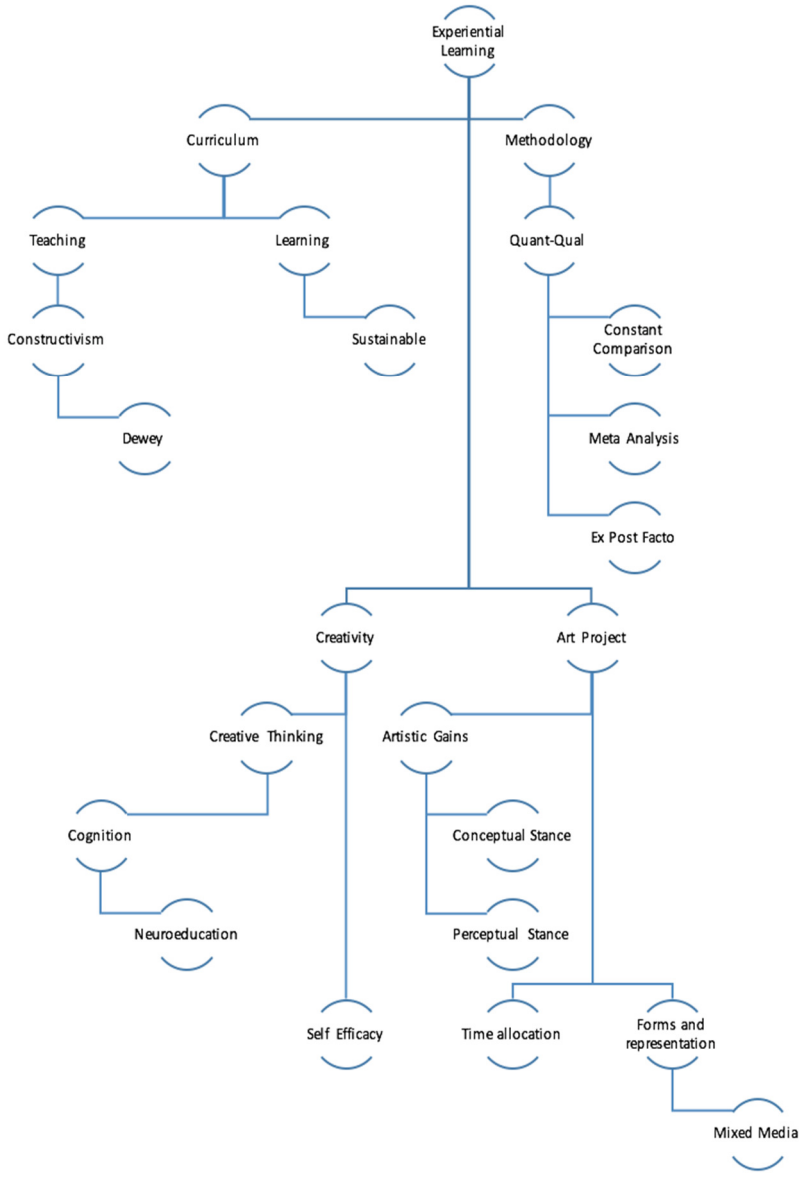


Figure 4: Research Framework and Methodological Sequence

Analysis of the images will be done by looking at the overall quality of work. In the beginning, students tend to use one or two types of media they feel comfortable with, but by the end of the project their artwork will include a variety of media. An examination of craftsmanship and careful placement of marks will be discussed. During the project, an investigation into their own unique apple creations, known as "Anything Apples" will be completed. A rich discussion about types of materials, line quality, placement of marks, neatness, negative space and overall enhanced ability to

create an image that they intended. Along with the images of artwork, the student reflections will be explored so we can understand how they feel about a possible change in their artwork, critical thinking ability and confidence level.

Figure 5: Apple Project Example

Methodology

Participants and Location

Participants for this study were selected from AED 303, Visual Arts in the Elementary Classroom which the author served as the instructor for 3 semesters. Purposeful sampling was used in selecting the specific students, as these are the students that regularly attend art class. The lesson was introduced via power point where the students were asked to write down notes about the new concept, then the images were taken down. Reflections were handed out at the end of the project and the ones that were completed were used for data collection purposes.

Research Objectives

1. Students will show evidence of the use of critical thinking skills and aspects of creativity should be demonstrated.
2. Students will demonstrate artistic growth, especially in the area of repleteness (Carothers & Gardner, 1979)
3. Students will report on their confidence level in art at the conclusion of the project.

The above objectives serve as a guide for data collection during the *Apple Project* based on formative assessment, and was supported by action research since it allows for students to continuously reflect and adjust thought processes as they utilize their critical thinking skills. A total of nine lesson plans were designed to collect data for this unit and comprised of related unique essential questions and objectives. The instructor served as a participant observer during the lesson in order to be reflective as supported by action research

Sullivan (2010) states "it is within a notion of art practice as research that the full potential of cognition and creativity as informing human capacities can be realized" (p. 99). He then goes on to say, "Within this academic environment conventional research in general proceeds from the known to the unknown, yet it is important to acknowledge the benefit of inquiry that moves in the other direction – from the unknown to the known – for fresh perspectives as much as prior knowledge are determinants in creating and constructing new knowledge. This is the trajectory of inquiry that characterizes practice-based research" (p. 100).

Data Collection

A baseline assessment of student initial skill was conducted through self-portrait instruction (Figure 7). Following the baseline assessment, students were taught the elements and principles of design, art history and various art techniques in a scaffolding methodology utilizing small 5 x 5 images of an apple. They were taught 28 techniques in the image of an apple (Figure 5) and asked to create their own 22 "anything apples" that were techniques not taught in class. (Figure 6). Once the students completed all 50 Apple Images, they were then told to create a unique background for each one that not only enhanced the Apple image itself, but also made the 5x5 square look like a completed work of art. To assist in data collection and analysis, creativity was defined in this research as a way of thinking that produces an intentional outcome that is novel, useful and insightful. The students were assessed on original ideas for their Anything Apples and a variety of successful background techniques that enhanced their original image. The final data collected was a self-portrait where students were instructed to fill in the negative space (the same instruction as the Apple Project) with images that reflected them as future teachers. (Figure 8).

The students worked to complete their 50 total apple images while experimenting with new ways to create art after being given basic knowledge of materials and art styles. Figure 6 shows the results of scaffolding basic tools and how the students utilized that knowledge to build on, allowing them to come up with their own styles and techniques.

Figure 6: Apples created by the students

Findings

Significant artistic growth was demonstrated, increased self-efficacy was reported, and enhanced creative thinking was observed over the course of the project. Students were able to draw, paint and create polished, original artwork without specified instruction. Artistic gains, increased self-efficacy and enhanced creative thinking appeared positively correlated. The combination of artistic gains through scaffolding and increased self-efficacy through experiential learning may lead to enhanced creative thinking skills.

Students stopped stating that they "could not draw" and that they "are not creative" and instead, just began creating wonderful work. When they entered the classroom at the beginning of the semester, they were mostly comfortable using only their own pen or pencil they brought with them to class. They hesitated to make any type of artwork and when they did, they put forth minimal effort. Once we started the Apple Project, the students all relaxed. They were able to trace an apple image, so no one had to stress out about drawing an apple. We started with types of line, which was fairly easy and an enjoyable first lesson. The students were not overwhelmed and were embracing choosing pencils, crayons or markers and picking out their color scheme. The following lessons, (there were 9 total) built upon prior knowledge and ranged from paint techniques, to value to found objects and optical illusions. Once all 28 Apples were created the students were instructed to come up with 22 of their own, completely unique versions of Apples, things we did not think of in class. The final task was creating backgrounds for all 50 apples utilizing all the knowledge they gained in order to fill in all the negative space in a way that enhanced their Apple image. So they needed to consider color, style and technique while carefully working around the Apple image.

Through qualitative evidence, it has been demonstrated that the novel technique in this research is able to increase creativity in young adult students. This was supported by scaffolding, class observations, the measured number of students that enhanced their drawing and art ability and student reflections.

Figure 7: College artwork before the Project Figure 8: College artwork after the Project

Discussion

The productive tension between theory and practice creates the conditions for guiding classroom application, yet this is further influenced by policy makers and educational politics (Caldwell & Vaughan 2012; Tutt, 2014). Irrespective of whether theorists or policy makers raise questions and offer solutions for improving teaching and learning in schools, it is argued here that what teachers do in the classroom can provide empirical evidence for what might be considered effective.

It is important to note that the students were not taught how to draw, or how to be "expressive" or "creative". They were simply and only shown a variety of art techniques and styles by level of difficulty. On their own, they learned how to put concepts together (blending), transform techniques they were taught (bending) as well take an idea and make something new (breaking) to enhance their artistic ability and increase their level of creativity. The students gained confidence to experiment with paint, crayons, pastels, pencils, mixed media, etc which enhanced their drawing skill. They did this all while gaining an understanding of design and layout. They filled in negative space with a culmination of artistic markings, self-reflection and creative thinking.

The mission of the National Art Education Association (NAEA) asserts that, "[a]s professional art educators, we know and understand the essential value that art education holds for learners." What the NAEA advocates describes the aspirations, knowledge and experience of dedicated classroom art educators. However, knowledge and experience can be an incomplete foundation for improving what teachers do in classroom because to be effective requires theories and practices to be well-informed, contribute to community debate, and demonstrate purposeful and successful actions. The premise that underlies this study is that classroom practitioners can make a difference in the learning lives of their students, especially in partnership with educational theorists and researchers, along with supporting communities and professional networks.

Conclusion

The Apple Project is a teaching intervention designed to adapt and implement a constructivist theory to assess whether students were able to enhance their creative thinking capabilities by engaging in a series of creative tasks. The study is based on the pedagogical assumption that educators can teach creative thinking in order to not only promote artistic gains among students, but also facilitate strong connections to long term memory through scaffolding and experiential learning methods. This project provides evidence to show that students are able to enhance their creativity by connecting visual art with their personal identity, environment and other individualized concepts. It will also advance levels of critical thinking skills by allowing the freedom to make personal choices and increase confidence by scaffolding material, building upon prior knowledge to connect new concepts. Finally, the project proposes a framework for increasing artistic capability as students explore various media and techniques, becoming comfortable with materials and finding their own style of art making.

In this work, creativity is defined as a way of thinking that produces an intentional outcome that is novel, useful and insightful. The Apple Project is designed to incrementally build creative skills through scaffolding over a series of experiential lessons. The project is based on deliberate, spontaneous and flow definitions of creativity as well as concepts of breaking, blending and bending. The project takes into account the serial order effect by mixing media, style, and elements of design. Creative thinking was measured by the original ideas and successful execution of the students anything apples and subsequent backgrounds to all 50 apples. Artistic growth was analyzed through evaluating artwork before, during and after the Apple Project. Finally, self-efficacy was measured by a self-report submitted at the end of the course.

Significant artistic growth was demonstrated, increased self-efficacy was reported, and enhanced creative thinking was observed over the course of the project. Students were able to draw, paint and create polished, original artwork without specified instruction. Artistic gains, increased self-efficacy and enhanced creative thinking appeared positively correlated. The combination of artistic gains through scaffolding and increased self-efficacy through experiential learning may lead to enhanced creative thinking skills. This is a lesson plan that educators can use in the classroom in order to not only enhance artistic ability, but also to foster creative thinking.

This project offers an insight into practical application of creative thinking by an art educator trained in psychology and neuroscience. This lesson is carefully scaffolded to guide students into creative thinking by slowly raising the level of ability required to complete the tasks as well as coming up with novel ideas for new artwork. By bridging neurosciences with education, there becomes a novel insight of investigating ways that knowledge can be more practical and translated into every day concepts.

Limitations and Future Research

The sample of students were enrolled in AED 303: Visual art in the elementary classroom during Fall and Spring Semesters in 2015 through 2017. These young adult participants were in their sophomore year at Penn State studying to be future elementary teachers. The course was required as part of their elementary education certification.

During the implementation of this project, a few limitations occurred. These included absent students who had a difficult time catching up since the amount of work required in each class included completion of one or two apples. Each class period after the introduction of a new technique, style or artist, the students utilized their time as “open studio” in order to complete their apple.

Another obstacle was difficulty in objectively evaluating creativity on a continuum. In order to take as much subjectivity away as possible, this instructor measured creativity by evaluating 1) whether students copied the given example, 2) created

their own version via personalize color schemes and media choices and 3) by utilizing breaking, bending and blending ideas of creativity.

Building upon the present rigorous study with proven creativity gain, it is proposed that in future work a student's creativity can be nurtured from an educational, psychological and neuroscience perspective. Work along these lines should lead to a strong educational curriculum to enhance creativity. Research in this area will benefit education, developmental psychology, neuroscience, and innovation levels in society.

Practical Implementations

The research design addresses the realities classroom teachers face in translating educational theories and policies into effective teaching practices and learning experiences for their students. Classroom teachers have been described as action researchers (Brown & Jones, 2001; Kemmis & McTaggart, 19880), practitioner researchers (Cochran-Smith & Lytle, 2009), arts-based researchers (Barone & Eisner, 2012; Cahnmann-Taylor & Siegsmund, 2008) and connoisseurs (Eisner, 1991), which gives some indication of the various teacher-researcher roles they can be expected to fill. To realize the expectation that classroom teachers are effective change agents responsible for sustained educational improvement means they need to be knowledgeable consumers of theory and research, as well as efficient practitioners aware of the students' potential and be accountable for their progress. Irrespective of the issues theorists raise or the solutions policy makers offer for improving educational practices, it is argued that what art educators do in the classroom is crucial and provides empirical evidence for what might be considered effective.

Correspondence
Lindsay Esola, PhD Candidate
Pennsylvania State University
PA, USA
Email: lindsayhentzel@gmail.com

References

Alvarez-Huerta, P., Larrea, I., Muela, A., & Vitoria, J. R. (2019, July). Self-efficacy in first-year university students: a descriptive study. In *HEAD'19. 5th International Conference on Higher Education Advances* (pp. 565-572). Editorial Universitat Politècnica de València.

Barone, T. & Eisner, E. W. (2012). *Arts based research*. Thousand Oaks, CA: SAGE

Bandura, A. (1997). Self-efficacy: the exercise of control. New York: W.H. Freeman and Company.

Beaty, R. E., & Silvia, P. J. (2012). Why do ideas get more creative across time? An executive interpretation of the serial order effect in divergent thinking tasks. *Psychology of Aesthetics, Creativity, and the Arts*, *6*(4), 309.

Beghetto, R. A. (2006). Creative self-efficacy: Correlates in middle and secondary students. Creativity Research Journal, 18(4), 447–457.

Beghetto, R.A., & Karwowski, M. (2017). Toward untangling creative self-beliefs. In M. Karwowski, & J.C. Kaufman (Eds.), The cre- ative self: Effect of beliefs, self-efficacy, mindset, and identity (pp. 3–22). London: Academic Press.

Beghetto, R.A., & Kaufman, J. C. (2010). Broadening conceptions of creativity in the classroom. In R.A. Beghetto & J.C. Kaufman (Eds.), Nurturing creativity in the classroom (1st ed., pp. 191–205). New York: Cambridge University Press.

Bowman, N. A., Miller, A., Woosley, S., Maxwell, N. P., & Kolze, M. J. (2019). Understanding the Link Between Noncognitive Attributes and College Retention. Research in Higher Education, 60(2), 135–152.

Brown, T. & Jones, L. (2001). *Action research and postmodernism: Congruence and Critique.* Philadelphia, PA: Open University Press.

Cahnmann-Taylor, M. & Siegsmund, R. (Eds.) (2008). Arts-based research in education: Foundations for practice, England: Routledge.

Caldwell, B. & Vaughan, T. (2012) Transforming Education through the Arts. New York: Routledge.

Carothers, T., & Gardner, H. (1979). When Children's Drawings Become Art: The Emergence of Aesthetic Production and Perception. Developmental Psychology, 15 (5), 570.

Cochran-Smith, M., & Lytle, S. (2009). Teacher research as stance. *The SAGE handbook of educational action research*, 39-49.

Cooke, G., Griffen, D., & Cox, M. (1998). *Teaching young children to draw.* London: Falmer.

Cook, P. R. 2006. The project approach: An appreciation for the constructivist theory. *Forum on Public Policy*, September, 1–20.

Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention*. New York: Harper Perennial.

Daly, S. R., Mosyjowski, E. A., & Seifert, C. M. (2019). Teaching creative process across disciplines. *The Journal of Creative Behavior*, *53*(1), 5-17.

Davis, J. (1997). Drawing's demise: U-shaped development in graphic symbolization. *Studies in Art Education*, *38*(3), 132-157.

Dewey, J. (1934). *Art as experience*. New York: Minton, Balch and Co.

Dewey, J. (1986, September). Experience and education. In *The Educational Forum* (Vol. 50, No. 3, pp. 241-252). Taylor & Francis Group.

Dietrich, A. (2004). The cognitive neuroscience of creativity. *Psychonomic bulletin & review*, *11*(6), 1011-1026.

Dubin, R. E. (1947). The effect of training on the tempo of development of graphic representation in preschool children. *The Journal of Experimental Education, 15,* 166-174.

Duncum, P. (1988). To copy or not to copy: A review. *Studies in Art Education, 29,* 203- 210.

Eagleman, D., Brandt, A. (2017). *The Runaway Species: How human creativity remakes the world.* Catapult Publishing.

Eisner, E. W. (1972). Educating artistic vision. New York: MacMillan

Eisner, E. W. (1976). What we know about children's art- and what we need to know. In E. Eisner (Ed.), *The arts, human development, and education* (pp. 5-18). Berkeley, CA: McCutchan.

Eisner, E.W. (1991). *The enlightened eye: Qualitative inquiry and the enhancement of educational practice*. New York: Macmillan.

Eisner, E. W. (2002). *The arts and the creation of mind*. New. Haven, CT: Yale University Press.

Efland, A. D. (1990). *A history of art education*. New York: Teachers College Press.

Farmer, S. M., & Tierney, P. (2017). Considering Creative Self-Efficacy: Its Current State and Ideas for Future Inquiry. The Creative Self: Effect of Beliefs, Self-Efficacy, Mindset, and Identity, (November), 23–47.

Feldman, D. H. (Ed.). (1980). *Beyond universals in cognitive development.* Norwood, NJ: Ablex.

Garaigordobil, M., & Berrueco, L. (2011). Effects of a play program on creative thinking of preschool children. *The Spanish journal of psychology*, *14*(2), 608-618.

Gardner, H., (1982) Art, Mind and Brain: A Cognitive Approach to Creativity.New York: Basic Books.

Gardner, H. 2008. Quandaries for neuroeducators. *Mind, Brain, and Education*, 2, pp.165–169.

Goldberg, M. (1997). *Arts and learning: An integrated approach to teaching and learning in multicultural and multilingual settings*. White Plains, NY: Longman.

Golomb, C. (1973). Children's representation of the human figure: The effects of models, media, and instruction. *Genetic Psychology Monographs,* 57,197-251.

Golomb, C. (1992). *The child's creation of a pictorial world*. Berkeley: University of California Press.

Gruber, H. E. (1981). *Darwin on man: A psychological study of scientific creativity*. Chicago: University of Chicago Press.

Guilford, J. P. (1950). Creativity. *American Psychologist*, 5, 444-454.

Hardiman, M. M. (2012). *The brain-targeted teaching model for 21st-century schools*. Corwin Press, available online at: http://olms.cte.jhu.edu/olms2/data/ck/sites/1950/files/Hardiman%20Reading%20Companion%20and%20Study%20Guide%20BTT%20for%2021st%20Century%20Schools.pdf (accessed: 30.7.21)

Immordino-Yang, M.H. (2015). Emotions, learning, and the brain: Exploring the educational implications of affective neuroscience. New York: WW Norton & Company.

Immordino-Yang, M.H., and A. Damasio. 2007. We feel, therefore we learn: The relevance of affective and social neuroscience to education. Mind, Brain, and Education 1: 3–10.

Jordan, K., & Carden, R. (2017). Self-efficacy and gender in STEM majors. *Modern Psychological Studies*, *22*(2), 8.

Jaussi, K. S., Randel, A. E., & Dionne, S. D. (2007). I am, I think I can, and I do: The role of personal identity, self-efficacy, and cross-application of experiences in creativity at work. Creativity Research Journal, 19(2–3), 247–258.

Karwowski, M., & Beghetto, R. A. (2019). Creative behavior as agentic action. *Psychology of Aesthetics, Creativity, and the Arts, 13*(4), 402–415. https://doi.org/10.1037/aca0000190

Kemmis, S. & McTaggart, R. (Eds.) (1988). The action research planner. 3rd Ed. Melbourne, Vic: Deakin University Press.

Kim, K. H. (2010). Measurements, causes, and effects of creativity. *Psychology of Aesthetics, Creativity, and the Arts*, 4 , 131– 135 .

Kolb, D. (1984). *Experiential learning: Experience as the source of learning and development.* Englewood Cliffs, NJ: Prentice-Hall.

Lewis, H.P. (1963). The relationship of picture preference to a developmental status in drawing. *Journal of Educational Research*, 57, 43-36.

Lowenfeld, V. (1947). Creative and mental growth. New York: Macmillan.

MacKinnon, D. W. (1962). The nature and nurture of creative talent. *American Psychologist, 17*, 484–495.

Maslow, A. H. (1971). Creativity in self-actualizing people. In A. Rothenburg & C. R. Hausman (Eds.), *The creative question* (pp. 86-92). Durham, NC: Duke University Press.

McWilliam, E., Poronnik, P., & Taylor, P. G. (2008). Re-designing science pedagogy: Reversing the flight from science. *Journal of Science Education and Technology*, *17* (3), 226–235.

Milbrandt, M. K., J. Felts, B. Richards, and N. Abghari. (2004). Teaching-to-learn: A constructivist approach as shared responsibility. Art Education 57 (5): 19–24, 33–43.

Ng, A. K., & Smith, I. (2004). Why is there a paradox in promoting creativity in the Asian classroom? In L. Sing, A. Hui, & G. Ng (Eds.), *Creativity: When east meets west* (pp. 87–112). Singapore: World Scientific Publishing.

OECD. (2008). Innovating to learn, learning to innovate. Paris, France: OECD.

Pariser, D. (1979). Two methods of teaching drawing skills. *Studies in Art Education, 20,*30-42.

Pemberton, E. F. & Nelson, K. E. (1987). Using interactive graphic challenges to foster young children's drawing ability. *Visual Arts Research, 13,29-41.*

Piirto, J. (1998). *Understanding those who create*. (2nd ed.) Scottsdale, AZ: Gifted Psychology Press.

President's Committee on the Arts and the Humanities (PCAH) (2011), Reinvesting in arts Education: Winning America's future through creative schools. Washington, DC.

Rao, H., L. Betancourt, J.M. Giannetta, N.L. Brodsky, M. Korczykowski, B.B. Avants, and M.J. Farah. (2010). Early parental care is important for hippocampal maturation: Evidence from brain morphology in humans. NeuroImage 49(1): 1144–1150.

Rogers, C. (1959). Toward a theory of creativity. In H. Anderson (Ed.), *Creativity and its cultivation*. New York, NY: Harper & Row.

Ruppert, S. (2006), Critical Evidence: How the Arts Benefit Student Achievement, National Assembly of State Arts Agencies, available online at: http://nasaa-arts.org/wp-content/uploads/2017/05/critical-evidence.pdf (accessed: 30.07.21)

Shin, S. J., & Zhou, J. (2007). When Is Educational Specialization Heterogeneity Related to Creativity in Research and Development Teams? Transformational Leadership as a Moderator. Journal of Applied Psychology, 92(6), 1709–1721.

Stankiewicz, M. A. (2001). *Roots of Art Education Practice. Art Education in Practice Series*. Davis Publications, Inc., 50 Portland Street, Worcester, MA 01608-2013.

Sternberg, R. J., & Lubart, T. I. (1999). The concept of creativity: Prospects and paradigms. In Sternberg, R.J. Ed., *Handbook of creativity*, 3-15. Cambridge, UK: Cambridge University Press.

Sullivan, G. (2010). Artistic cognition and creativity. In The Routledge companion to research in the arts (pp. 129-149). Routledge.

Thompson, C. M. (2015). Constructivism in the art classroom: Praxis and policy. *Arts Education Policy Review, 116*(3), 118-127.

Tierney, P., & Farmer, S. M. (2002). Creative self-efficacy: Its potential antecedents and relationship to creative performance. *Academy of Management journal*, *45*(6), 1137-1148.

Tutt, K. (2014). U.S. arts education requirements. Arts Education Policy Review, 115 (1): 93-97.

Van Dinther, M., Dochy, F., & Segers, M. (2011). Factors affecting students' self-efficacy in higher education. Educational Research Review, 6(2), 95–108.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Wagner, T. (2012). Creating innovators: The making of young people who will change the world. New York: Simon & Schuster.

Wallas, G. (1926). The Art of Thought. Cape, London (UK).

Wilson, B. & Wilson, M. (1979) Of graphic vocabularies and grammar: Teaching drawing skills for worldmaking. *School Arts,* 75,36-41

Wilson, B. & Wilson, M. (1981). I draw - you draw: the graphic dialogue. *School Arts, 10,* 50-55.

Wood, D., Bruner, J., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Child Psychiatry*, *17*, 89−100.

Yang, K. K., Lee, L., Hong, Z. R., & Lin, H. S. (2016). Investigation of effective strategies for developing creative science thinking. *International Journal of Science Education*, *38*(13), 2133–2151.