

Use and Influence of Technological Gadgets on Students' Performance in Art Production

Sunday JAMES¹ & Agbeyan Simon Festus²

¹Department of Fine and Applied Arts, Faculty of Arts,

Kwara State University, Malete-Ilorin, Nigeria.

²Department of Tourism and Hospitality Management, Faculty of Management and Social Sciences,

Kwara State University, Malete-Ilorin, Nigeria.

DOI: <https://dx.doi.org/10.47772/IJRISS.2024.803095>

Received: 06 January 2024; Revised: 23 January 2024; Accepted: 27 January 2024;

Published: 09 April 2024

ABSTRACT

Despite the opportunities afforded art teachers in the use of technology today, many of them avoid these opportunities; either because they are not interested or they prefer the traditional way of teaching or they lack the know-how to use them. A cursory look at our Art institutions and Departments in Nigeria today reveals that there is need to overhaul the training methods and facilities in the system to meet global standard and technology-driven society of our time. This paper discusses the place of technology in Art pedagogy; looking at studio practice and theory, its influence on art production and sustainability in the future. The purpose of the study is to evaluate the quality of computer gadget-aided paintings and those made from real objects among selected students in tertiary institutions. Methodology adopted includes literary review, survey and practical experiments. The paper points to the fact that the role of technology cannot be over-emphasized in art teaching and learning, exhibition and sale, recording, preservation, as well as documentation and archiving of art experiences. It is recommended that teachers of Art must be abreast with modern techniques in teaching in a dynamic and technology-driven world of today.

Keywords: Camera, Gadgets, Future, Art education, Technology,

INTRODUCTION

The 21st century today has witnessed a great deal of technological advancement. A lot of computer packages, software and gadgets have been invented to make the job of the artists simpler. It is therefore, necessary to embrace these facilities and opportunities provided in this regard in Art pedagogy. Pedagogies are approaches used by a teacher to get his or her message across to the students. In other words, art pedagogy implies methodology of teaching and learning of Art. Students of Art in this century are exposed to a number of gadgets and these are used within the classroom settings. Hence, for the future of art to be sustained, the use of technology within the studio and classroom situation cannot be over emphasized. The question arising from this now is – how well have these gadgets and opportunities provided enhance students' performance; especially as it relates to art practice? This is the thrust of this study.

Purpose of the Study

The purpose of this study is:

- to ascertain whether computer gadget-aided paintings are better than those made from real objects.
- to assess the difference between computer-aided paintings and those made from real objects.
- to evaluate the quality of computer-aided paintings and those made from real objects among selected students in tertiary institutions.

Research Questions

- Are computer-aided paintings better than those made from real objects?
- Is there any significant difference between paintings made from computers and real objects?
- Are computer-aided paintings better evaluated and graded than those made from real objects?

Theoretical Framework for the Study

Formal theory of art; postulated by Plato (427-347 B.C.) was chosen for this study. The theory emphasizes organizational qualities of a work of art (Osborne, 1981, p. 48). This theory sees a work of art as made of materials like: wood, marble, paint on canvas, ink on paper and so on; which possess texture, contains shapes, occupies space, reflects certain colour and is apprehended over time. In addition, the elements mentioned above are organized together in a certain way to communicate an idea to the world. The discussion about the value of paintings from this perspective is to consider it within the formal theory of art. Formal theory emphasizes the following concepts:

1. **Form** – Here, the shape, size, location, scale, texture, visual clarity of a work of art is examined.
2. **Colour**– This has to do with harmony and dissonance in the use of colour, properties of light (illumination) and tonal values.
3. **Design** – In looking at design, properties like balance, symmetry and asymmetry, order, unity, proportion and geometric are examined.
4. In formal theory of art, emotional responses to attributes listed below are possible. Such attributes include – a beautiful colour, a beautiful combination of shapes, a feeling of awe in response to the scale, mass, symmetry of building and so on. We also have cognitive responses like comparison of art and nature and comparison of different works of art in formal terms.

In this study, artworks produced from technological assistance were compared with those made from real object in terms of physical properties in relation to the idea of the theory and how well the artist were able to represent the object/s being depicted.

LITERATURE REVIEW

Technology and its use in Art Practice over time

Many students today adopt the use the camera and other gadgets in solving some artistic problems. They see it as a quick aid to produce their art works; using the camera in the phones. Upon seeing the Camera Obscura in 1839, Paul Delaroche (1797-1856); a French Painter said “from today, painting is dead” (Harrison, 2005, p.55). This was as a result of the fear that the camera will make artists lose their job and service will no longer be needed. Instead of losing their job, artists of the period quickly use the camera as a tool in their profession. The camera; for instance is a product of technology and has become an important aid to the artists across ages. It comes in still various forms and types; from analogue and digital and even

now in cell phones. Students now see it as an important aid in accomplishing artistic tasks. Hodge (2008, p.6) notes that over two thousand years ago, Aristotle wrote about the Camera Obscura and by the early 1500s, artists were using it as a drawing instrument. It was believed by many artists of that time that incredible accuracy and details in painting can be achieved by using the photograph.

The teachers of Art today see it as a threat to creativity instead. But is the camera really a threat or an aid? Great artists in the past had employed the use of technology in their creative quests. For instance, the pronouncement of the camera in 1839 brought the tension between photography and painting to a verbally dramatic head. Paul Delaroche's often quoted claim, "Painting is dead, long live photography". This was as a result of the fear that the camera would take the job of the artists. Instead of this, artists of the period quickly use the camera as a tool. Delaroche, however was convinced not so much of the demise of painting but of the fact that photography would constitute an important aid for the artist. The photograph would serve as an object of observation and study. With this in mind, Delaroche was the first to recommend that his artist colleagues build up photographic study collections which they could only acquire otherwise at the price of much time and effort, and still not of the same perfection, however great their talent might be.

In at least fifty works of Paul Gauguin (1848-1903) created in Polynesia, – paintings, sculptures, drawings, prints and illustrations were informed by his appropriation of poses or motifs taken from his large collection of photographic reproductions of art and from ethnographic photographs of indigenous people of Oceania. Gauguin was never an artist shy of "plagiarizing" the works of another he admired, use of photographs served to neutralize or even naturalize his acts of borrowing pictorial ideas from the world encyclopedia of art. He also used photography to maintain his attenuated relationship with the avant-garde in France (Kosinski, 1999, pp. 117-140).

The invention of computer paralleled the introduction of the television during World War II, and the computer was used as an electronic information storage and processing device. The image innovation of the computer and television merged into a new field of study; computer imagery. It became obvious that a distinct relationship existed between television, computer imagery and image processing and transmission (Bassam, 2006). Recent developments in photography include Advanced Photo System (APS); capable of giving you the choice of three image formats, so that you can choose the best one for subjects simply by pressing a button. The other feature of APS is index printing. The index printing are returned with sheet showing a thumbnail images of each shot, so ordering enlargement of new prints is very easy (Harrison, 2005).

Technology and Sustaining the Future of Art Teaching and Practice

With the many advantages of the computers and modern technologies in education as well as the teaching-learning process, the adoption of traditional methods and techniques of teaching cannot be pushed aside. According to Greh (1990), computers are not a substitute for studio Art; instead they work side by side for the students benefit. They can co-operate and they can combine, but they must not destroy each other. Winslow (1989) made a strong case for the inevitability of combining new technologies with traditional forms of Art. He believe that we must mirror the old with the new and that in the process of relating technology with traditional forms, new and important perceptions will evolve. McCulloch (1984) shares the opinions of Winslow and Greh, he acknowledged that "the introduction of computers in Art education should not replace other current methodologies, but should be an extension of the creative process employed in any valid Art instruction. Stanley (1993) explained that technology should thought of as facilitating the artistic and creative process in which the artist or designer engages. It is a delivery system for instruction in Art, and an Art form itself. Stanley said "for Art education, it implies a total rethinking of how we deliver instruction in the visual arts and the content of the Art curriculum at every level.

One key principle in the future of art education is how art teachers will integrate traditional tools, processes

and the thinking skills needed to synthesize a diversity of concept and a world of complex information. Students must be systematically engaged with technology from the earliest age, especially that computer is now accessible to most students and to most schools, and the capacity of the computer in terms of its memory and the programs which are now available can be adapted to various levels of instruction within the Art curriculum. A wide range of computers, cameras, Android Cell-phones, i-Pads and other gadgets as become an electronic wheel for generating, inventing, creating, sorting, storing, analyzing, combining, enhancing and changing visual images. A wide range of applications are available are now available to assist students by stimulating traditional tools, providing textures, manipulating images and allowing unlimited digital art experience. By using technology, students have the opportunity of a range of multimedia and interactive sessions to compose, sketch, disseminate and illuminate their ideas easily.

Gregory (1995) noted that technological innovation is a world-wide paradigm shift in many aspects of the society, including the educational community and the way they operate. As computers became popular in education, they assumed a different role. They were and still used to acquire information, process, send, deliver and serve as tool for teaching and learning. In those and other technology old much promises to improve student's motivation and learning. To Gregory (1995) electronic imaging can no longer be set apart from the basic construct of Art Education. The media has changed the way Art is taught, students learn about Art, and how Art teachers conceive the idea about Art Education. Computers change the process and techniques for creating images in every field in which Art students engage such as drawing, painting, print-making, design and in modern times including 3-dimensional design.

Hannor (1991) notes that computer-assisted learning in Art education promotes higher level thinking skills develop creativity and sensitivity, and it assists the development of technical, critical and analytical skills. Most national governments look to educational system to address the need for digital literacy, which places the responsibility on schools and teachers (Epstein, Nisbet & Gillespie, 2011). The approach to meeting this need for an ICT-conversant workforce varies widely by country and region as do the barriers, challenges, and limitations to access, skills, and usage of digital technology (ITU, 2009). Moving away from technocentrist approaches requires a significant change in thinking by policy makers and those in leadership positions. This is an important step to conceptualizing technology-rich environments that is likely to improve teachers' practice and students' learning. Globally, this shift continues to be a challenge when one considers pedagogy as an integral part of technology (Watson, 2001). In few countries, where access, skill and usage of technology were available, the absence of skill and usage by the teachers limit students' skills and usage. In the context of skill and usage, technology-rich environments are dependent on the teachers who instruct the students as much as they are dependent on the availability and affordances of technology itself. Pedagogies within technological rich environments are linked to teachers' pedagogical knowledge, technological knowledge and context knowledge (Chai Ling Koh, Tsai, & Lee Wee Tan, 2011). Other contextual factors that also influence teaching, include students' home, environments, cultural context, and individual differences.

Bassam (2006) notes further that with advances in technology, the computer took additional role of generating, inventing, creating, sorting, combining, analyzing, enhancing and changing visual images. It was also capable of accepting images from other sources such as videos images, still-photographs, electronic image and drawing. Similarly, with a variety of modern technology as seen in the invention of the computer, it is possible to cast a scene on a plane canvas using computer generated and edited images. This could be painted out with ease and better accuracy without necessarily looking for such natural scenery; even though such practice comes with some shortcomings, its use cannot be overemphasized and neglected as it affords beginners and upcoming artists to learn to create images and scenes from their day-to-day experiences. Lectures and practical sessions can also be recorded, played and replayed to enhance better understanding of students. Technology promotes engagement of students in learning: it provides a great opportunity for both the teacher and students to engage themselves in and out of the classroom, a few apps that can be used for

this purpose include; Aviary, Paper5₃, DoodleArt, Green Screen, KaleidaScam, PicsArt and Procreate (<http://www.theartofeducation.com>).

Contemporary innovations include projecting images on plain canvasses which are later painted out in colours. Artificial intelligence (AI) is also a recent development in art production. In this century, it is possible to produce good paintings from robots and other gadgets without physical human effort of conventional painting with brushes. AI can be used to enhance or change existing human creations or entirely create new form of art. At the beginning of the twentieth century, the great development of photography, communication, and other media technologies hit Western art, which was based on realism at that time; thus bringing unprecedented sense of crisis to art workers, and more and more artists realized that the only way to establish a new artistic status was to innovate, thus giving birth to numerous art schools (Yan Shen & Fang Yu, 2021).

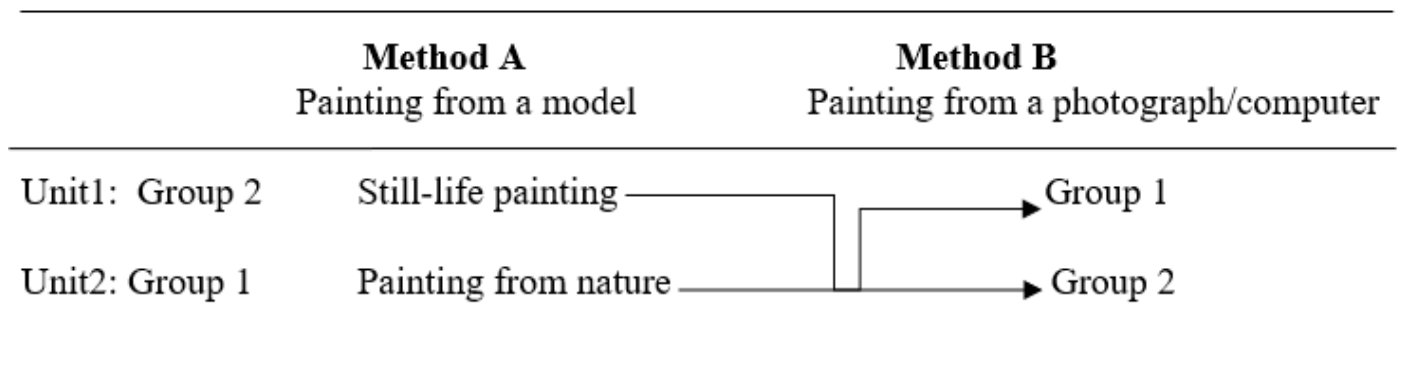
METHOD

This study is qualitative and quantitative in nature, aimed at improving best practice, process and performance towards improving the quality of education in Nigeria. The qualitative approach takes care of the formal properties of works produced by the students while the quantitative aspect looks at the degree of artists' performance. The population for the study comprises of a sample of 100 respondents randomly selected from Fine and Applied Arts students in Kwara State University Malete. They constitutes two groups of control and experimental groups; fifty in each group used for the study. Respondents were exposed to two practical sessions of studio practice in painting in a controlled manner by the researcher using the paradigm below:

Paradigm for the Design

Fig. 1: The Counterbalanced Design

Replication Method



Source: Koul, 2009, p. 162.

This research design above has the following advantages:

1. The design overcomes the weakness of selecting subjects for experimental and control groups that may result in interaction effect between selection and certain extraneous variables like selection, maturation and history
2. The results obtained cannot be mistakenly attributed to the effect of independent variables and pre-existing differences in the subjects.
3. It exposes the subjects in each group to the same experimental treatment, conditions and use of the

same instruments (Koul, 2009, p. 162, Oni & Udida, 2012, p. 31, Maduekwe, 2011, p.174).

INSTRUMENTS FOR DATA COLLECTION

The following instruments were used to collect data for the study:

Observational Rating Scale:

A rating scale was developed to assess students' competence with or without technological assistance in art production. Observation of participants was made during different sessions to know if the subjects display special skills such as: proper use of materials and facilities, good theme, subject-matter, adequate drawing skills, good use of space, colour, light and shade, rendition and so on were examined.

Structured Questionnaires:

A questionnaire was developed by the researcher to elicit students' and opinions on painting with or without technological aid.

Table 1: Sample of the Questionnaire on Students' Perception of Painting with or without Photographs (SPPWWP)

S. N	ITEM	SA	A	D	SD
1.	I do not like to paint from life objects.				
2.	Painting from life objects is easier than painting with aids				
3.	I do not like challenging exercises.				
4.	Painting with technological assistance is more challenging.				

Practical Achievement Tests (Tests of practical knowledge in painting):

A practical achievement test of painting skills was carried out. One experimental group was allowed to paint with photographs during the first stage while the other group painted from real objects; this was later reversed in the second stage. The subjects produced a painting at the end of each treatment stage. 'Likert-type' rating scales: Teacher's Rating Scale on Students' Competence in Painting with Photographs (TRSSCPWTA) and Teacher's Rating Scale on Students' Competence in Painting without Photographs (TRSSCPWOTA) were constructed for this purpose using the Excellent (5), Very Good (4), Good (3), Fair (2), Poor (1) structure. Qualities like: theme, subject-matter, drawing skill, use of space, use of colour, light and shade, rendition among others, were measured.

Validation of Instruments

To establish the face, content and construct validity of the items for this study, the test items were given to experts, experienced painters, art teachers, lecturers and professors to look at their suitability in relation to measurement of practical skills. The comments from the experts and supervisors were used in selecting the final test items and validate other instruments for the study.

DISCUSSION OF RESULTS/FINDINGS

The pictures below are examples of paintings made from life objects and photographs in different sessions during the study. One can see greater details and accuracy recorded in the painting made from a photograph

which is a product of technology.



Fig. 2: A painting made from real objects.

Source: The Author, 2015.



Fig. 3: A painting made from a photograph.

Source: The Author, 2015.

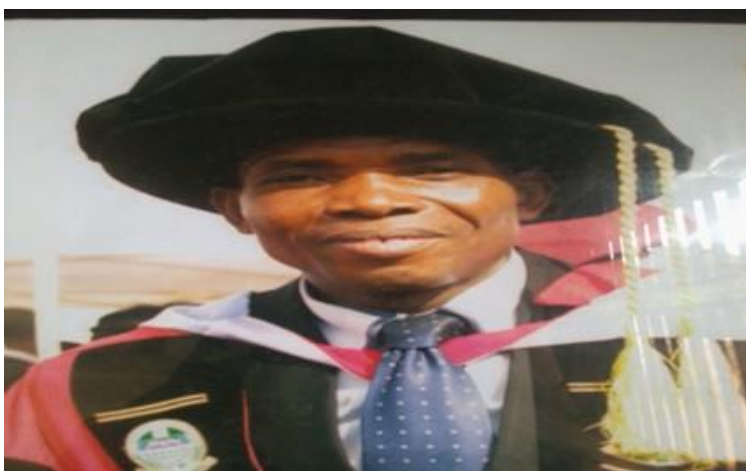


Fig. 4: A Photograph from a Camera

Source: The Author, 2023.



Fig. 5: A Computer Edited Photograph.

Source: The Author, 2023.

Table 2: Students’ Opinion on Painting with or without technological assistance (Number of Respondents and Percentages)

Item	Strongly Disagree	Disagree	Agree	Strongly Agree	Number of Respondents
Painting from a computer has negative impact on the painter	10(8.3%)	31(25.8%)	51(42.5%)	28(23.3%)	100
There is always no tremendous positive impact when one paints from a photograph or computer	10(8.3%)	24(20%)	58(48.3%)	28(23.3%)	100
Paintings made from photographs/computer are not better than those from life object	26(21.7%)	50(50%)	29(24.2%)	5(4.2%)	100
Painting from computer does not make my work unique	17(14.2%)	29(24.2%)	45(37.5%)	29(24.2%)	100
It is not convenient to paint from a photograph or computer	10(8.3%)	49(40.8%)	38(31.7%)	23(19.2%)	100
Painting from photographs does not increase my interest and love for painting	13(10.8%)	32(26.7%)	50(41.7%)	25(20.8%)	100
I do not produce a better painting each time I paint from a photograph or computer	18(15%)	34(28.3%)	46(38.3%)	22(18.3%)	100
Painting from life objects makes me more creative	27(22.5%)	49(40.85%)	28(23.3%)	16(13.3%)	100

I will rather not do an easy task	17(14.2%)	35(29.2%)	45(37.5%)	23(19.2%)	100
Painting from a computer makes a painter lazy	22(18.3%)	45(37.5%)	41(34.2%)	12(10%)	100

Table 2 above shows that 54.2% of the students indicated that there is no tremendous positive impact when one paints from photographs. A higher proportion of 59.1% shows that paintings made from photographs are not better than those from real objects. Even though 13.3% strongly agreed that using photographs do not make a painting unique, 84.1% of the total respondents supported the view that painting from life objects make students more creative. Apart from these very important views, the study also indicates that over a half (50.8%) of the students agreed that painting from photographs breed laziness among students, thus, supporting previous observations that such method do not encourage creativity and uniqueness.

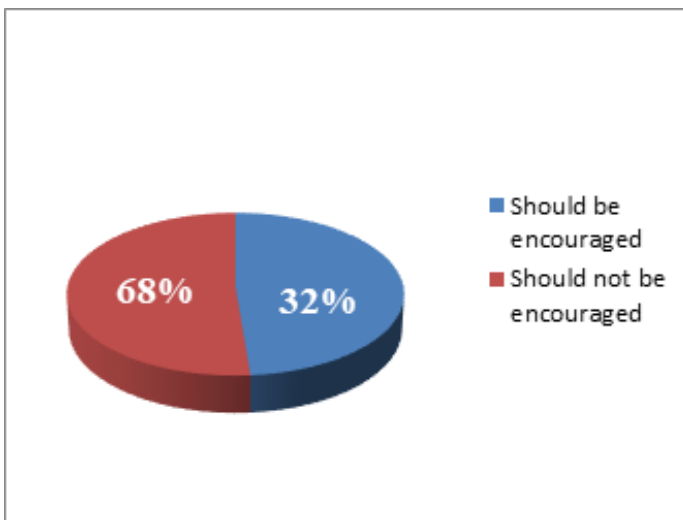


Fig. 6: A Pie-Chart showing Respondents' Opinion on encouraging Painting from a Photograph or computer

Source: The Researcher, 2023.

Figure 5 above shows respondents' opinion on whether use of technological gadgets should be encouraged or discouraged in art classes /lessons.

From the findings, the following opportunities are provided:

- Technology increases opportunities for research work. Use of laptops, smart phones, and tablets encourages students to discover facts by themselves. It is a fantastic and fascinating way for students to learn and conduct researches.
- Technology helps teachers to transform teaching methodologies and strategies during Art classes and provides opportunity for them to vary their methods of teaching. Use of projectors, cameras, i-pads, chrome books, smart or interactive boards, as well as smart phones. The era of conventional classroom when teachers do it alone is gone. This confirms the saying by Alexandra K. Tremfor – “the best teachers are those who show you where to look but don't tell you what to see”.
- Traditional art forms can be transformed using different apps. Artworks created manually can be manipulated and transformed using a variety of apps. For instance; a photograph or drawing earlier made can be edited with apps like Aviary.
- Students are offered the opportunity to create art in a new way, hence, the need for computer literacy is necessary for all students in the ‘Visual Arts’, most especially at the university level as it afford student the opportunity to be educated in the visual use of technology while being educated in and about the content of the curriculum, studio arts, aesthetics, art history and art appreciation.

- The study also shows that students' performance in painting is enhanced and better when aided with a computer and other technological gadgets.

SUMMARY, CONCLUSION AND RECOMMENDATION

The paper concludes that the use of technology cannot be over emphasized in modern day classrooms and studios; hence its use is imperative if the future of Art education is to be sustained. By doing this, the students will be better-off for the job and practice in line with global standard. Computers and other gadgets can be tremendously powerful tools in terms of students' output as well as in teaching-learning process; there is much educational value in using technology to enhance learning. Computer-assisted programmes can promote a learning environment which supports student-teacher interaction.

Recommendations

The following recommendations are made to improve pedagogical practice in Art:

- More support must be given to teachers to become more proficient at technology-based instruction in student-centered ways. This could be done through periodic pre-service and in-service trainings.
- Art studios should be made more attractive and conducive for teaching and learning.
- Teachers must strive to be abreast with modern techniques in teaching in a dynamic and technology-driven world of today.
- Policy-makers and those in position of authorities should draw up policies that promote technological development.
- Enough time should be allocated on the time table for teachers' and students' usage in a technology-rich environment.

Declaration of ownership

We hereby declare that this article is our original work.

Conflict of Interest

The authors declare no conflict of interest in the study.

Ethical Clearance

This study was approved by our institution.

REFERENCES

1. Ayanso, A, Cho, D. I. & Lertwachara, K. (2014). Information and Communication Technology Development and the Digital Divide. A Global and Regional Assessment. *Information Technology for Development*, 20 (1) 60-77. Doi: 10.1080/02681102.2013.797378.
2. Chai, C. S. Ling Koh, J. H., Tsai, C. C. & Lee Wee Tan, L (2011). Modeling Primary School Pre-service Teachers Technological Pedagogical Content Knowledge (TPACK) for meaningful Learning with Information and Communication Technology (ICT). *Computers and Education*, 57, 1184-1193, doi:10.1016/compedu.2011.01.007.
3. Chen, C. (2008). Why do Teachers not Practice what they believe regarding Technology Integration? *The Journal of Educational Research*, 102(1), 65-75. Retrieved on from: <http://www.tandfonline.com/doi/abs/10.3200/joer.102.1.65-75>.
4. Epstein, D., Nisbet, E. C. & Gillespie, T. (2011). Who's Responsible for the Digital Divide? Public Perception and Policy Implications. *The Information Society*, 27(2), 92-104.

Doi:10.1080/01972243.2011.548695.

5. Gardener, H. (1988). Towards more effective Art Education. *Journal of Aesthetic Education*, 22 (1), p. 30.
6. Greh, D. (1995). Computers in Art Education. *Secondary Art Education: An Anthology of issues*. The National Art Education Association, Reston. Pp 127-138.
7. Hannor, J. (1991). The Effects of Technology on Early Development. *Education and Computing*, 7 (3,4), p. 167.
8. Harrison, H. (2005). *Painting Great Paintings from Photographs*. New York: Sterling Publishing Co. Inc.
9. Hicks, J. (1993). Technology and Aesthetics. *Art Education*, 42-47.
10. International Telecommunication Union (ITU), (2009). *Measuring the Information Society-The ICT Development index*. Geneva, Switzerland: International Telecommunication Union.http://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2009/MIS209_w5.pdf.
11. Stanley, M. (1993). The Age of Electronic Image: The Effect on Art Education. *Art Education*, 9-16.
12. Watson, D. M. (2001). Pedagogy before Technology: Re-thinking the relationship between ICT and Teaching Education and Information Technologies, 6 (4), 251- 266.[doi:10.1023/a:1012976702296](https://doi.org/10.1023/a:1012976702296).
13. Winslow, B. (1989). A Mirror for Brunelleschi, in Sieling, N. (Ed.). *The Technological Imagination: Machines in the garden of Art*. Intermedia Arts Minnesota. Minnesota College Art and Design.
14. Wynita, H. (2019). 10 Ways Technology can enhance the Art Room. <http://www.theartofeducation.com/2019/03/10-ways-technology-can-enhance-the-art-room>.
15. Yan, S. & Fang, Y. (2021). The Influence of Artificial Intelligence on Art Design in the Digital Age. *Scientific Programming for Fuzzy System Modeling of Complex Industry Data (Special Issue)*