Measuring the Impact of Technological Evolutions on Fine Arts Competence Development

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Abstracts

Technological evaluations have significantly enhanced college students' fine arts competence development by providing advanced tools and platforms that foster creativity, improve technical skills, and enable innovative artistic expression. In this study 500 college students were mentioned as participators. The variables Technological Tools, Technical Proficiency, Advanced Technologies, Creativity and Innovation, Online Platforms, Skill Development, and Collaborative Competencies are built to evaluate various aspects of technological and creative capabilities in educational and professional settings. Fine arts competitions like the (Artificial Intelligence) AI art contest, digital choreography competition, and speech AI innovation challenge are held for the students to improve their skill development. The questionnaires are taken to measure the student's technological skills development based on before and after competitions. The SPSS software version 28 is used to statistically analyze the data with multiple regression analysis and pearson correlation analysis. The results showed that the integration of technological tools and platforms significantly improved college student's technical proficiency, creativity, and collaborative skills in fine arts. Students exhibited notable enhancements in skill development and engagement with advanced technologies post-competition. Technology significantly enhances fine arts education by improving students'

artistic skills and collaboration. Embracing digital tools offers valuable opportunities to enrich curricula and foster innovation.

Keywords: Advanced technologies, Fine arts, Technical proficiency, Technological tools, Skill development, Art contest.

Introduction

The faculty's sections of ceramics, visual arts, cartooning and animation, painting, printing arts, and glass offer instruction in the domains of design and artistic creation today [7]. The goal of fine arts universities is to give students access to a broad education that allows them to define and communicate themselves freely through innovative and imaginative work opportunities in an interdisciplinary professional setting [15]. This education should be appropriate to the needs and circumstances of the university, city, and nation. Students are accepted to all academic departments upon pre-registration and passing a particular talent assessment, by the philosophy of producing competent graduates in the fields of art, design, and application [10]. To consistently rethink and test both individuals and learning, it is now essential to view technology, science, and the arts as a totality. There are many beautiful things in the world that are neither monetary nor quantifiable. Developing the ability to recognize, cherish, and appreciate existing beauty ought to be the primary aim of existence [18]. Kids and teens need to learn how to perceive, love, investigate, be creative, and use their hands, brains, and bodies. These days, the opportunities brought about by the quickly advancing technology are being trailed by musicians [13]. In technology, artists may now experiment with numerous techniques. Artists employ a variety of expressive mediums while creating and exhibiting artistic pieces. To use the opportunities provided by technology to engage and impact the viewer or participant, artists create works that incorporate both audio and visual aspects [11]. In the end, digital life and technological advances have grown into an essential part of today's world. Artists employ technological tools and techniques in their creations, as they are the people who best embody their era. Art has moved away from its conventional framework and created a very new visual and comprehension as a result of the rapid and dramatic breakthroughs in technology [12]. Scientific and technological advancements have given rise to new forms, new artistic disciplines, and technical variety. In the field of art, new categories and interpretations have emerged, including interactive art, hybrid art, Video art, internet art, and technological art or new multimedia art [3]. Furthermore, art aids in the creation of exceptional and one-of-a-kind items that set them apart from comparable ones in the fiercest rivalry of the day. Students who are tech-savvy and possess 21st-century abilities will accelerate the rise of active persons in this profession. Given that live in an era of communication and information, using technology to share information and fulfill communication needs has become essential [8]. In this sector of the economy, technological innovations are the most rapid and efficient. The creation of images, how they are presented, and their aesthetic value are highlighted by these technologies. Stated differently, art also has a unique function in this [2].

Aim and contribution of this study

The advancement of fine arts competency in college students has been greatly aided by technological assessments, which offer cutting-edge resources and portals that promote imagination, expand knowledge of technology, and facilitate original creative thinking.

- In this study, 500 college students are mentioned as participants, and their data was gathered.
- To improve pupil's acquisition of technological skills, the competencies of AI art contest, digital choreography competition, and speech AI innovation challenge are provided.
- The study used questionnaires to explore the students' skill development before and after the competition.
- Utilizing SPSS software version 28 the data are analyzed using multiple regression and Pearson correlation.

Literature review

A virtual classroom learning environment (VCLE) with a digital foundation was examined [16] and developed using a combination of quantitative and qualitative approaches. The synthesis and subsequent development of the VCLE included the two stages of the research approach. Ten more specialists were consulted in addition to the study's authors to help construct and evaluate the model. The findings showed that the gamification processes should be presented and studied in a real-world educational setting before the VCLE design was used. In advanced assessment, they examined the technologies of virtual reality (VR) and augmented realities (AR), printing with 3D printers, drones, the Internet of Things denoted as IoT, machines, laboratory simulations, block chain, holograms, and wearable technology that were revolutionizing the field of engineering [6]. In science and technology education, emphasized was placed on using such tools to help students acquire technical information and build their abilities. To assist in the understanding of the benefits and drawbacks of utilizing technology into the process of training and development by educators and other participants and instruction, the evaluation aims to give guidelines.

The institutional framework of pedagogic instruction provided essential training for individuals implementing STEAM (Science, Technology, Engineering, Arts, and Mathematics) education, focusing on design, research, and meta-subjects [1]. The inclusion of robotics in math, science, technology, and visual arts curricula could improve teacher preparation for STEAM education. The study's questionnaires highlighted the urgent need to prepare general education graduates for the demands of the twenty-first century. Artificial intelligence (AI) continues to develop as an effect of the digitization and automation of everyday life. Controlling complexity, analytical thinking, and communications were just a few of the skills that make up creatively-focused technology fluency (CFTF) [4], which was necessary to utilize AI effectively. The method established talents that were centered on creativity while supplementing conventional knowledge and abilities.

Regression techniques were used in the study to investigate the digital competency of teaching professionals utilizing two large-scale evaluation data sets from eleven different nations. While there was less variance in attitudes, the results indicated a large diversity in abilities and knowledge [5]. Whatever their experience, most respondents agreed that digital technology was important in the classroom. The research advances ideas and practices about the abilities, attitudes, and knowledge possessed by educational professionals while also advancing their understanding of digital competency from the viewpoint of the field of education. According to the study [9], it was critical to incorporate STEM technology into the curriculum for aspiring labor education instructors. To enhance pedagogical abilities, it lists several digital applications, including Learningapps, Educaplay, Padlet, Flippity, MindMeister, Cacoo, Bubblus, Mindomo, Glogster, ThingLink, Toki-Toki, Powton, Kahoot, Plickers, and PearDeck. Incorporating digital technology into education presents obstacles for instructors, as the report clearly emphasizes.

Using an interpersonal method, the research looked at the technological inclinations and 21st-century abilities of 198 students at the faculty of fine arts [14]. Utilizing criteria related to gender and grade level, the investigation evaluated these competencies and skills. The technology sensitivity scale and the 21st-century skills scale were employed as data-gathering instruments. The pupils' 21st-century talents were comparatively strong, but their technological sensitivity was only modest, according to the results. Additionally, the study discovered a strong, positive correlation between these abilities and technical predispositions, suggesting a substantial link between the two. To enhance their scientific subject understanding, and self-efficacy to apply STEAM education and perspectives on STEAM teaching, teachers in Title I primary schools took part in an online professional development certification curriculum. Research [17] points to the necessity of iterative enhancement of educational PD (Professional Development) programs and long-term online teacher preparation. According to the findings, teachers' opinions of STEAM and their understanding of science subjects had a big impact on how confident they felt about using STEAM instructional approaches.

Hypothesis development

Hypothesis 1: The integration of technological tools (TT) (digitized devices & programs) in fine arts teaching assists much in uplifting students' technical proficiency (TP) to among students.

Hypothesis 2: By means of data, to achieve creativity and innovation (CI) for fine arts practice through the advanced technology (AT) integration which has been adopted as training ground for advanced.

Hypothesis 3: Online platforms (OP) and virtual assets provide more accessibility in fine arts education to improve skill development (SD) for college students.

Hypothesis 4: Technological tools (TT) that enable collaboration considerably enhance collaborative competencies (CC) amongst fine arts students and professionals. The following Fig 1 suggests the conceptual diagram for hypothesis.

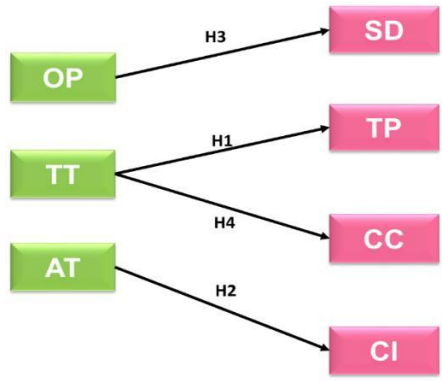

Fig 1 conceptual diagram

1. Variables

✷ TT: It refers to digital tools and software used in fine arts, such as graphic design programs, digital drawing tables, and 3D modeling software. These tools are designed to enhance the creation and manipulation of art, offering new methods and techniques for artists.

✷ TP: To measures the level of skill and competence an individual has in using technical tools and techniques in fine arts. This includes the ability to effectively utilize digital tools, software, and traditional art techniques to achieve desired artistic outcomes.

✷ AT: Encompasses cutting-edge technological innovations such as VR, AR, and AI that are applied in fine arts. These technologies provide new ways to create, experience, and interact with art, often the boundaries of traditional art forms.

✷ CI: The ability to generate novel and original ideas and solutions in art practice. This variable assesses how new technologies and tools contribute or enhance an artist's creative process and the development of innovative art forms.

✷ OP: Includes websites, social media, and online communities where fine arts education and practice are facilitated. Online platforms provide access to educational resources, peer feedback, and exposure to a wider audience, influencing how artists learn and share their work.

✷ SD: The process of acquiring and improving skills related to fine arts, including both technical skills, related to fine arts, including both technical skills and artistic skills (technique and style). Skill development is crucial for enhancing overall competence and performance in the fine arts.

✷ CC: The abilities required to work effectively with others in a collaborative art environment. This includes using technological tools that facilitate collaboration, such as cloud-based software and online galleries, to enhance teamwork and collective creativity in fine arts projects.

2. Participants

The data collection provides insights into the demographic characteristics and technological tool usage among 500 college students participating in numerous competitions. It highlights a diverse age and gender distribution, with substantial involvement throughout distinctive sorts of competitions. The majority of college students determine their skill improvement as slight, with various stages of self-stated skill ability. Technological tool utilization suggests a preference for superior technology together with VR and digital drawing tablets, with much less emphasis on AI software. Overall, the findings illustrate how students are engaging with current technology in their inventive and overall performance endeavors in the following Table I.

Table I data of the participants

Category		Frequency	Percentage
Age	18-20	150	30%
	21-23	200	40%
	23-25	100	20%
	25-27	40	8%
	27+	10	2%
Gender	Male	220	44%
	Female	280	56%
Competitions	The AI art contest	130	26%
	Digital Choreography Competition	200	40%
	Speech AI Innovation Challenge	170	34%
Self-Assessment of Skill Development	High	145	29%
	Moderate	233	46.6%
	Low	122	24.4%
Technological Tool	Digital Drawing Tablets	185	37%
	Virtual Reality (VR) Tool	235	47%
	AI software	80	16%

3. Research instruments

For an observation regarding 500 college students collaborating in various fine arts competitions, a set of established questionnaires changed into developed to evaluate changes in key competencies before and after the competitions. The questionnaires were designed to evaluate seven particular variables, TT, OP, AT, SD, TP, CC, and CI. The survey was distributed before and after the competitions to the students. Before the competitions, the questionnaires aimed to gauge college students' preliminary proficiency and not well-being levels with digital tools, online platforms, superior technologies, and their general ability development. They also assessed their experience with collaborative projects and how well fine arts concepts had been incorporated into their curriculum. The goal was to establish a baseline for every pupil's competencies and familiarity with relevant technologies. Post-competition, the questionnaires were used to measure the effect of participation variables. They centered on how students' skills

in the usage of technological gear and superior technologies had stepped forward, how their use of online platforms and academic apps had advanced, and how their collaborative and technical skills had evolved. Additionally, they evaluated modifications inside the integration of first-rate arts within their academic satisfaction. This approach aimed to provide a complete understanding of ways competition participation stimulated college students' capabilities and educational results, highlighting the effectiveness of technological and collaborative interventions in great arts education.

4. Data analysis

Using the version 28 model of SPSS for pearson correlation and multiple regression evaluation gives a strong and user-friendly technique for statistics evaluation. SPSS gives intuitive interfaces for calculating Pearson correlation coefficients, permitting one to effortlessly test the strength and route of multiple relationships amongst variables. For multiple regression evaluation, SPSS enables the modeling of relationships by way of allowing the inclusion of multiple predictors to determine their collective impact on established variables. The software program's complete output consists of certain statistical evaluations, importance stages, and regression coefficients, which assist in deciphering the information successfully. Additionally, SPSS gives diagnostic equipment to check for assumptions and validate the version in shape, making sure dependable and accurate outcomes on the have a look art's variables.

I. Pearson Correlation Analysis

Pearson correlation analysis is an effective technique for exploring the relationships amongst key variables on this study, which includes TT, TP, AT, CI, OP, SD, and CC. This statistical method assesses the power and direction of linear establishments among those continuous variables, assisting to pick out correct-sized patterns and relationships.

- Key Relationships and Interpretation

By the use of Pearson correlation analysis, find how variables which consist of TT relate to TP and Creativity, revealing whether the adoption of unique tools balances college students' talents and innovative capabilities. Similarly, the assessment can show if AT are linked to more Creativity and if OP beautify CC and SD. Calculating Pearson correlation coefficients will suggest imply the character of those relationships, with coefficients starting from -1 to 1 representing the power and direction of correlations. Evaluating the significance of these coefficients allows for a clear information of the way these elements engage, imparting valuable insights into their effect on fine arts schooling.

II. Multiple Regression Analysis

A suitable approach for examining the intricate interactions between several variables, including AT, TT, TP, OP, CI, SD, and CC, is multiple regression analysis. This method provides a more comprehensive understanding of the interactions between several random factors by assessing how they collectively affect a particular variable.

- Key Applications and Interpretation

In this study, a multiple of regression analysis may be used to assess how TT, AT, and OP contribute to modifications in TP, CI, and SD. For example, it is able to determine if the mixed impact of the usage of diverse technological equipment and structures significantly predicts upgrades in students' technical competencies and creative output. Additionally, the analysis can discover how CC are generated thru these technological elements. By evaluating regression coefficients and their statistical importance, to find out which variables have the maximum enormous effect and the way they interact to have an effect on students' common performance in great arts. This technique offers a comprehensive view of the variables' contributions and interactions, assisting to guide powerful techniques for enhancing fine art competencies

5. Performance evaluation

This section describes that the Pearson correlation analysis and the multiple regression analysis are analyze the data of 500 students and their competition performance.

I. Pearson correlation analysis

Table II outcome of pearson correlation analysis

Variable	TT	TP	AT	CI	OP	SD	CC
TT	1.000	0.62**	0.55**	0.67**	0.58**	0.64**	0.53**
TP	0.62**	1.000	0.60**	0.59**	0.57**	0.70**	0.65**
AT	0.55**	0.60**	1.000	0.54**	0.61**	0.59**	0.58**
CI	0.67**	0.59**	0.54**	1.000	0.63**	0.68**	0.61**
OP	0.58**	0.57**	0.61**	0.63**	1.000	0.60**	0.55**
SD	0.64**	0.70**	0.59**	0.68**	0.60**	1.000	0.62**
CC	0.53**	0.65**	0.58**	0.61**	0.55**	0.62**	1.000

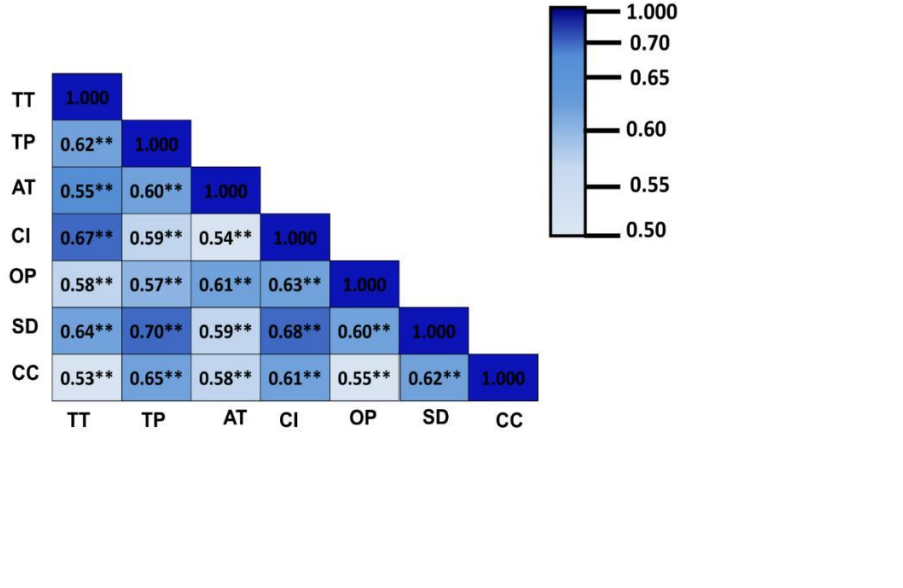

Fig 2 graphical representation of pearson correlation analysis

The Pearson correlation Table II and Fig 2 displays the relationships among diverse variables, TT, TP, AT, CI, OP, SD, and CC. Each cell inside the table represents the correlation coefficient among a pair of variables, showing how strongly and in what path the variables are associated. For instance, a high positive correlation between TT and TP (0.62**) indicates that multiplied use of technological tools is associated with higher technical skills. Similarly, CI has a positive correlation with SD (0.68**), indicating that more creativity correlates with progressed talents. The significance stages (**$p < 0.01$) indicate that these correlations are statistically significant, supplying dependable insights into the relationships among these variables.

II. Multiple regression analysis

Table III outcome of multiple regression analysis

Variable	Unstandardized Coefficients (B)	t-value	Standardized Coefficients (Beta)	p-value	Sig.	95% Confidence Interval
	B	Beta	Std. Error			
constant	1.875	-	0.347	5.412	0.000	0.000
TT	0.345	0.295	0.071	4.872	0.000	0.000
TP	0.220	0.184	0.062	3.512	0.001	0.001
AT	0.290	0.245	0.069	4.178	0.000	0.000
CI	0.255	0.220	0.069	3.675	0.000	0.000
OP	0.187	0.145	0.067	2.786	0.006	0.006
SD	0.310	0.273	0.273	4.254	0.000	0.000
CC	0.275	0.233	0.233	3.928	0.000	0.000

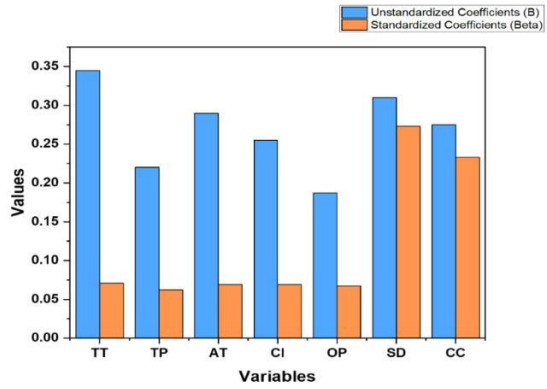

Fig 3 graphical representation of multiple regression analysis

The Table III and Fig 3 presents the effects of the multiple regression analysis, displaying how each predictor variable TT, TP, AT, CI, OP, SD, and CC affects the dependent variable. Unstandardized coefficients (B) imply the quantity of alternate within the structured variable for every one-unit trade inside the predictor. Standardized coefficients (Beta) allow for the

evaluation of the relative impact of each variable. The t-values determine the power of the relationships, the 95% confidence intervals provide a variety for the true coefficient values, ensuring the precision of the estimates. The outcomes highlight that every predictors have a large impact on the structured variable, with the confidence intervals assisting the reliability of those findings.

Discussion

This study highlights the transformative impact of technological gear and structures on university students' fine arts abilities. By analyzing data from 500 individuals via Pearson correlation and multiple regression in the usage of SPSS version 28, the studies demonstrate tremendous upgrades in technical skill ability, creativity, and collaborative abilities. The use of superior technology and online platforms became discovered to beautify talent development and foster innovation, with consequences displaying excellent gains in college students' artistic and technical abilities put competition. The findings emphasize the effectiveness of integrating technological gear in fine arts education, offering treasured insights into how such interventions can enhance students' getting-to-know experiences and enhance their ordinary performance. The examination illustrates that embracing virtual advancements is crucial for advancing fine arts competencies and maximizing academic effects.

Conclusion

The establishment of fine arts competency in college students has been greatly aided by technology assessments, which offer cutting-edge resources and platforms that promote creativity, expand technical proficiency, and facilitate original artistic expression. 500 college pupils were identified as participants in this study. To assess the study more effectively, the following factors have been included, TT, TP, AT, CI, OP, SD, and CC. The pupils participated in fine arts contests to advance their abilities. The purpose of the surveys is to gauge the student's proficiency in technology based on contests. The data were statistically analyzed using multiple regression analysis and Pearson correlation analysis using the SPSS software. The findings demonstrated that students' technical competency, inventiveness, and collaborative fine arts skills were considerably enhanced by the use of technological resources and platforms. After the competition, students showed considerable improvements in their ability to gain new skills and their use of cutting-edge technologies. By fostering greater artistic ability and teamwork among pupils, technology significantly improves fine arts education. Using digital technologies offers significant opportunities to encourage creativity and improve education.

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