The Impact Of Digital Tools On Arts Education In Higher Institutions

[1]dr Sangeeta, [2]qingchang Guo, [3]dr.H.Devanna, [4]r. Nivethikha, [5]mcxin Tee, [6]dr Ravi Kumar P
[1]Assistant Professor & Phd Supervisor, School of visual arts and design, Apeejay Stay University
[2]Faculty of Education, Shinawatra University, guoqingchang2025@163.com, ORCID0009-0006-9409-829X
[3]Associate Professor, ECE, Vignan institute of information Technology Autonomous,VISAKHAPATNAM
[4]Assistant Professor, Sree Sowdambika College of Engineering, Aruppukottai, Chettikurichi, Tamil Nadu
[5]Faculty of Business and Communications, INTI International University, 71800 Nilai, Malaysia, ORCID 0000-0001-7990-8377
[6]Assistant Professor, Department of Media Studies, Kristu Jayanti College (Autonomous), K Narayanapura Bangalore-560077

Abstract– *By integrating the digital tools in arts education, teaching and learning in higher institutions has been changed. This study focuses on the effects of several such digital tools, from digital design software to virtual collaboration tools, on the educational experiences of students as well as on the educators in arts related disciplines. The paper investigates how using these tools affect creativity, accessibility, collaboration and how they develop a skill. This research tries to learn from surveys, interviews, and case studies from selected institutions to provide an understanding of ways arts education would utilize digital tools to cope with challenges and opportunities.*
Keywords– *Digital tools, arts education, higher institutions, creativity, technology integration, student engagement, virtual collaboration.*

I. INTRODUCTION

Technology has gone on to be an integral part of the developing education and it has played a significant role in knowledge gets delivered and consumed. Especially in higher education institutes, there has been a heavy change in education methods and content with the inclusion of digital tools and the environment finally adopted towards the education of disciplines with the evolution of examinations and books being converted into apps, where education with it a new approach slowly changes. These technological advancements have affected fields the most, out of all and among them is the arts. Traditionally, arts education in higher institutions has been, and continues to be, based on face-to-face and tactile instruction, on studio-based learning and on physical materials [2]. The integration of digital tools in the study of the arts has enabled new opportunities for both the students as well as the teachers. Students are also able to explore a wider variety of resources, trying new expressions forms, and communicating with like minds from different geographic regions. In addition to bringing about greater students' creative capacities, digital media also enables them with essential technical skills that are increasingly in demand in the contemporary art and design industries. Also, digital tools make way for innovative teaching methods, which blend traditional teaching techniques with current and 'promising' technology creating a more dynamic and flexible course of learning. Foster creativity is one of the basic things that digital tools offer in arts education. With traditional art in painting, sculpture, photography, the physical materials are being limited [4]. On the other hand, the use of digital tools allows students to manipulate real time images, sounds and interactive media in the same manner as with artistic expression. Adobe Creative Suite, Blender, and Procreate are programs that give the students an endless opportunity to learn on digital design, 3D modeling, video editing and animation. These tools, not only will they inspire creativity, but they will also give students a glimpse into the kind of practical knowledge that one needs within a digitalizing creative economy.

Virtual platforms enable students from different institutions or locations to work on projects together, share their work with peers and discuss both with them in real time. They also promote cross-disciplinary collaboration between students from different disciplines (i.e., fine arts, graphic design, media arts), where

students can work together to create innovative projects that combine many different media and techniques. Furthermore, the growing interconnectedness of the global art community further enables the exchanging of ideas and offers the students a broader context to carry out their work [10-12]. On the one hand, it is natural that certain digital tools can aid in teaching arts at the same time, however, also one the problems of integration of the digital tools into the educational process in arts area is emphasized. There is this technological divide, which can be barriers of learning to some students, it can thus reduce the effectiveness of digital tool integration in such settings. On the other hand, some critics allege that the excessive reliance on technology in arts education may eliminate touch, feel, and the skills highlighted in art forms of having an artisan's hand. These are concerns which show the need to proceed with balance in the matter of arts education and both traditional and digital methods [5]. This study is aimed at exploring the digital tools' role in arts education in higher institutions. It seeks to discuss how these tools have helped engagement, creativity and skill acquisition and collaboration. Since digital tools have multi-faceted influence on arts practice and learning, this research aims at adding to the knowledge that will guide the development of future arts education initiatives and suggest ways to strengthen the integration of technology into the curriculum. There is an urgent need to understand the entire digital tool used in arts education with the growth of digital media and the proliferation of technological literacy in creative industries. Overall, this study will provide a wealth of lessons for both the benefits and possible pitfalls of such tools for educators, administrators, policymakers, and all others interested in harnessing the potential of technology to boost the place of arts education in our schools.

Novelty and Contribution

Admittedly, this research furthers the existing body of knowledge by considering the particular influence of digital tools on arts education within higher institutions. While there have been past studies to deal with technology broadly as presented within the scope of education and the impact of technology, few have considered the implications which digital tools have when they pertain to the teaching and learning of the arts, creativity, and student outcomes. If this paper is to inform more nuanced views on how these tools are used in arts education and what the challenges are for the educators and students, it must also be based on a comprehensive study of how these tools are being used in arts education that is based on surveying of educators, interviews with educators and case studies of institutions using these tools [7].

Another contribution is that this study investigates the dual function that digital tools fulfill in supporting creative processes while at the same time incorporating new technical skills in the students. It is especially pertinent now, as increasingly more industries across the graphic design, media arts and animation are dependent on digital technology to produce and deliver. The contribution of this study is to point to a reorientation of arts education in which digital tools not only would become a source of creativity, but also a means to develop creativity through technical skill development. The last but not the least contribution of this paper is its study of challenges in digital tool integration, in particular issues of access and equity. The arguments for digital tools are salient, but this research acknowledges that students are not equally mannered to use these tools. The study helps provide some direction in developing more inclusive and equitable educational practices for the advancement of all students with technology. Additionally, the methodology of the study is both qualitative and quantitative and thus provides a comprehensive approach to exploring the wide spectrum of educational experience of students and faculty within the home of arts education. This research will provide insights for the development of future arts education educational strategy and policy, and that the use of digital tools for arts education have a positive impact and are equitable and sustainable.

II. RELATED WORKS

In 2022 K. Prykhod'ko et.al., O. Khil et.al., O. Pobirchenko et.al., O. Umrihina et.al., V. Kalabska et.al., and O. Bobyr et.al., proposed the macro change of the technological growth and change in the educational practices, the integration of digital tools in arts education has received more attention in recent years. However, the role that digital tools would play in the future of arts is being discussed at its very origin, from how digital tools can help improve the creative processes and accelerate the collaboration to that digital tools are widening the set of technical skills that are available to the students. Research in this area has examined how tools in this space impact on the use of student creativity and how the rapid

change in education now may employ educators at a different level in integrating the use of these tools to the traditional presentation of art. Often, the art of creativity was thought of as an act of physical creation involving artistic mediums like paint, clay, or canvas. Now, students have new avenues for creative exploration, though they do not yet have new outlets for all their creative ambitions. They give the capacity to chop and mend pictures, creating inventive works of art and playing in computer formulated areas. Also, such platforms enable students to try out virtually any styles and techniques that would be difficult to emulate with the use of the traditional methods. These tools, because they are becoming more available, give students the freedom to break general boundaries and to explore digital arts that would be conventional in conventional classroom settings.

In 2020 N. Ularu et.al., [1] suggested the digital tools also contribute to the development of skills relevant to the contemporary world of art, the technical skills. When industries such as animation, graphic design, video production and game design are growing, students need to be trained in these areas, and they have to be creative and be good with the specific software and production techniques of this time. With the blend of digital skills into arts curricula, students can bridge the gap between old and new artistic practice and industry need. Those who are proficient in these tools are better prepared to enter the workforce as they already have those skills required to master the highly digitized creative economy. Today, virtual platforms to facilitate remote communication and collaboration are key in modern education, especially when there is a limitation in face value interaction, such as in the time of the global pandemic. They have enabled students of art to access people of other disciplines and from across the globe, making artistic creation more global. Digital whiteboards, cloud-based project management system and virtual art exhibitions are all online tools that make collaboration and sharing work seamless. Now students can do groups projects, get peer feedback, exchange cross institution experiences, etc. make the whole learning process richer. While there is no doubt to the advantages, there are some challenges too when it comes to integrating the tools of the digital world into an education system that aims to teach about the visual and performing arts. Many would argue one large issue in that disparity in access to technology, especially in ghettoes or economically challenged communities. Due to this digital divide, students in wealthier institutions or even regions have the privilege of accessing the latest roaring resources but students from otherwise wealthy backgrounds are at the disadvantage as they can't afford to buy books and other academic resources to keep pace with the rest. This means that sometimes students can't gain equal learning outcomes because those students need access to digital skills that are becoming essential in the modern art world — yet they aren't being provided that level of access. Furthermore, some educators have also been musing about posting too much of arts education on digital devices. Whether or not these tools are truly revolutionary depends on how reliant students become on them and to what degree of traditional art practice is sacrificed. All of this develops fine motor skills and also an intimate way of being with the materiality of materials like clay, paint, or charcoal. Agreeing with the critics, some say that by using too many digital tools, students become in touch with the physicality of these art making and thus cannot retain enough energy to approach these techniques in a fair way. In 2020 S. Davis et.al. and L. G. Phillips et.al., [6] introduced the pedagogical implications of digital tool integration also warrant attention. The use of digital tools in the classroom forces an adjustment of teaching strategies for educators. Art instructors at traditional schools are trained in how to pass on this technique in the hands-on way and how to engage the student practicing their direct work at the materials. While digital tools necessitate new ways of teaching, they also tend to combine traditional practices with the use of new tools. The use of digital tools is one which educator now have to balance with traditional techniques to prevent it slowly destroying students' education by failing to cover the technical and conceptual aspects of art. In such a shift, instructors might need some time to become acquainted with new digital tools and may view them as counteracting the more physical touch that learning in an arts environment entail. Another serious issue is the demand for constant professional development of educators to manage the quickly moving by development in digital technology. The software and digital tool environment is changing so quickly that instructors must keep up with new tools, techniques and digital art buzz of the environment. But that requires not just available training, but institutional support to make the integration of digital tools in the curriculum effective. Educators who lack adequate processes, digital tools, and training may have trouble utilizing digital tools in a way that could maximize their ability to positively affect the student

learning experience. The incorporation of digital tools in arts education does not allow for the concept of equity to be left out. It is important to make sure all the students, no matter of the socioeconomic background, have access to the tools and the resources they need for them to engage with digital art. They have initiated initiatives wherein some institutions provide students with access to digital tools through loan programs, scholarships and technology partnerships. The ideas are to bridge the gap and make sure that all the students get the advantage that digital tools have to offer to the educational opportunities [9]. Digital tools of arts education offer plenty of chance for creative engagement, study of skills, and teamwork, and yet their implementation entails its own obstacles. Moving forward, the art of arts education will be to balance between tradition and development by applying digital tools in ways that assist, instead of depleting, traditional artistic ways of practicing.

III. PROPOSED METHODOLOGY

This research explores the different impacts that the use of digital tools could bring to arts education on higher institutions and uses a mixed method approach where both qualitative and quantitative data collection methods are combined. The intended method is a way to comprehensively understand how a digital tool integration will affect student creativity, skill development, collaboration, and overall academic experience. This transformation is studied using different aspects with surveys and case studies, interviews and statistical analysis, with the proposed approach.

A. Research Design

This combination facilitates a more holistic treatment of the research problem in that the details of personal experience of faculty and students can be gleaned from, while at the same time providing context to such patterns that can be generalized across a variety of institutions.The several higher education institutions which have embedded digital tools into their arts curriculum will be the target group for the study. The mix of universities will be a combination of public and private, and the mix of art disciplines will be — at least — fine arts, graphic design, multimedia and performance arts. It will be broken down into two phases whereby an initial phase for data collection and a later one for analysis and interpretation.

B. Data Collection

Phase 1: Survey

A designed and distributed survey to students in arts programs from selected institutions will be. The focus of the survey will be to gather data about how students used data tools, their perception of the benefits and the challenges in using those digital tools. The questions will focus on such aspects as:

- Frequency of digital tool usage (e.g., hours per week)

- Types of digital tools used (e.g, software for graphic design, video editing, 3D modeling)

- Impact on creativity and skill development

- Collaboration with peers via digital platforms

- Challenges faced in using digital tools (e.g. technical issues, lack of access, lack of skills)

The data from the survey will be analyzed using descriptive statistics to provide a general overview of students' engagement with digital tools.

Phase 2: Interviews and Case Studies

Semi interviews will be conducted with a sample of students and faculty. The purpose of the interviews is to get qualitative insights on how digital tools have affected creativity in arts education, what makes them effective and what do they have to bring for the students learning. They will consult with faculty members about their experiences integrating digital tools into their teaching, strength or weaknesses of these tools, and whatever problems they had encountered. So students will answer questions on how the use of digital tools has changed their learning experience, creative process and the cycle of acquiring skills.

In addition, case studies will be done of certain courses or projects. The outcomes of the digital interventions that these case studies examine will specifically focus in the digital tools that have been used in the teaching and learning processes.

C. Data Analysis

The data collected will be analyzed in two parts:

- Descriptive and Inferential statistics will be used to analyze the survey data. To summarize the frequency of digital tool usage, type of tool available, and students perceived impact, descriptive statistics (mean, median and mode) will be used.

  One of the equations that may be useful for correlation analysis is:

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

Where:

- r is the Pearson correlation coefficient
- x and y are the two variables being tested
- n is the number of data points

Qualitative Analysis: The interview transcripts and case study data will be analyzed using thematic analysis. This involves identifying patterns and themes in the data that relates to the research questions. Themes such as "impact on creativity", "barriers to access," and "collaboration in digital environments" will be explored. Thematic analysis will allow the research team to draw out in-depth insights into the lived experiences of students and faculty regarding digital tool integration [14].

D. Mathematical Equations for Analysis

To analyze the data, several mathematical models will be used. Below are examples of equations that may apply:

- Mean of Survey Responses:

$$\mu = \frac{\sum_{i=1}^{n} x_i}{n}$$

Where:

- μ is the mean of the responses
- x_i is the individual response value
- n is the total number of responses
- Standard Deviation (for data variability):

$$\sigma = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \mu)^2}{n}}$$

Where:

- σ is the standard deviation
- x_i is the individual response value
- μ is the mean
- n is the total number of responses
- Linear Regression Model (for hypothesis testing):

$$Y = \beta_0 + \beta_1 X + \epsilon$$

Where:

- Y is the dependent variable (e.g., creativity score)
- X is the independent variable (e.g., frequency of digital tool usage)
- β_0 is the intercept
- β_1 is the regression coefficient
- ϵ is the error term
- ANOVA (for comparing means across multiple groups):

$$F = \frac{\text{Between-group variance}}{\text{Within-group variance}}$$

Where:

- F is the F-statistic

- The numerator represents variance between groups (e.g., different levels of digital tool usage)
- The denominator represents variance within groups

These mathematical equations will help in quantifying and analyzing the relationships between digital tool usage and various outcome measures, such as creativity, student engagement, and academic performance.
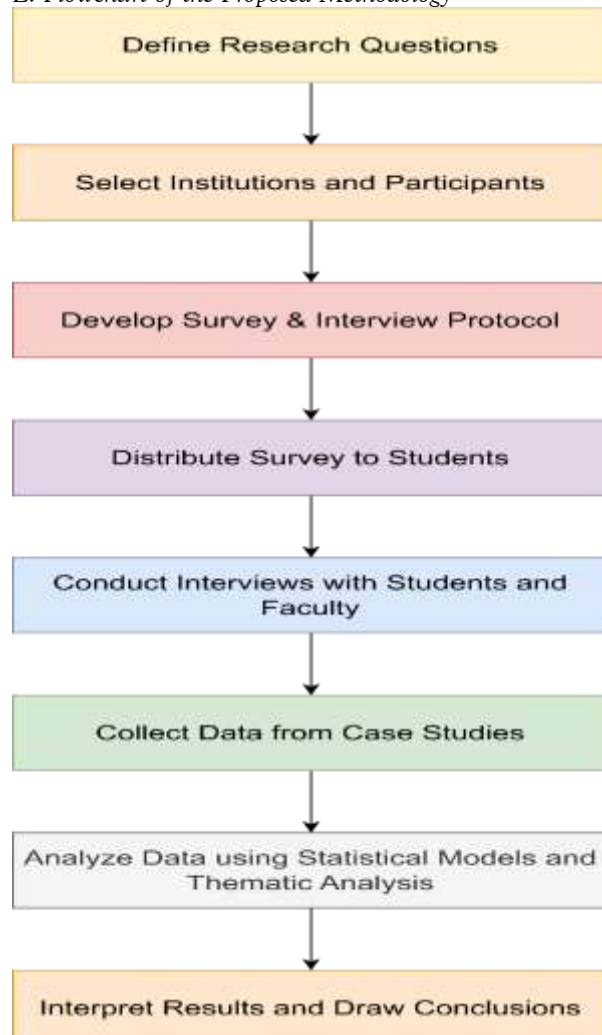
E. Flowchart of the Proposed Methodology

FIGURE 1: WORKFLOW FOR INTEGRATING DIGITAL TOOLS IN ARTS EDUCATION CURRICULUM

IV. RESULTS & DISCUSSIONS

This study reveals that digital tools integrated into the arts education affect different aspects of students learning experience in a profound way. This section analyzes data from surveys, interviews, as well as case studies and presents the key insights drawn therefrom illustrated, where there is the need, by way of graphs, tables and diagrams [8]. An important number of students commonly resort to digital tools in their creative work, as shown by the survey results. The frequency of digital tool usage by the surveyed students is shown in Figure 2 and is presented as the proportion of students who use digital tools for more than 5 hours per week, which amounts roughly to 70 percent of all students. Therefore, digital tools appear to be a crucial part of the creative process for many students, if not all. It is no surprise to learn that these tools (digital painting software, 3D modeling and animation platforms) are used these days to build and work on artistic projects. Figure 2 provides a visual of the number of hours students that use

these tools spend on a weekly basis, with a strong trend of how much more hours students spend on the tools as they progress through their programs.
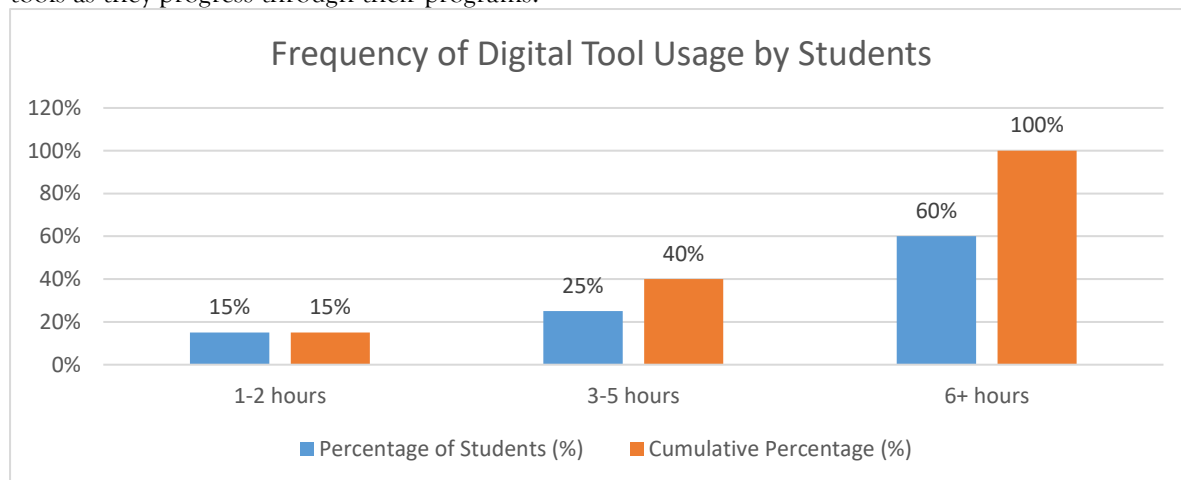

FIGURE 2: FREQUENCY OF DIGITAL TOOL USAGE BY STUDENTS

Of the tools used by students, graphic design software, video editing platforms and 3D modeling tools are the ones most used. Graphic design software, video editing, and 3D modeling software are the types of digital tools students use as shown in Table 1, which makes them the top three. This finding also underlines the degree to which these tools are becoming an important asset in helping students to be ready for careers in digital arts and media industries.

TABLE 1: COMPARISON OF DIGITAL TOOLS USED BY STUDENTS

Digital Tool	Percentage of Students Using It (%)
Graphic Design Software	35%
Video Editing Platforms	30%
3D Modeling Software	20%
Digital Painting Tools	15%

In this work, the influence of digital tools on student's creativity and skill development is the other key area under focus. The survey and interview data on students indicate that most of the students think that digital tools have significantly added to his creative capabilities. Figure 3 shows the percentage of students (between 65%) who perceive that digital tools give students the opportunity to freely experiment on various artistic styles and techniques. Students were allowed to undo and rework their digital work, add new dimensions to it, and use a variety of virtual tools and materials, all of which have enabled them to be more creative in their work.
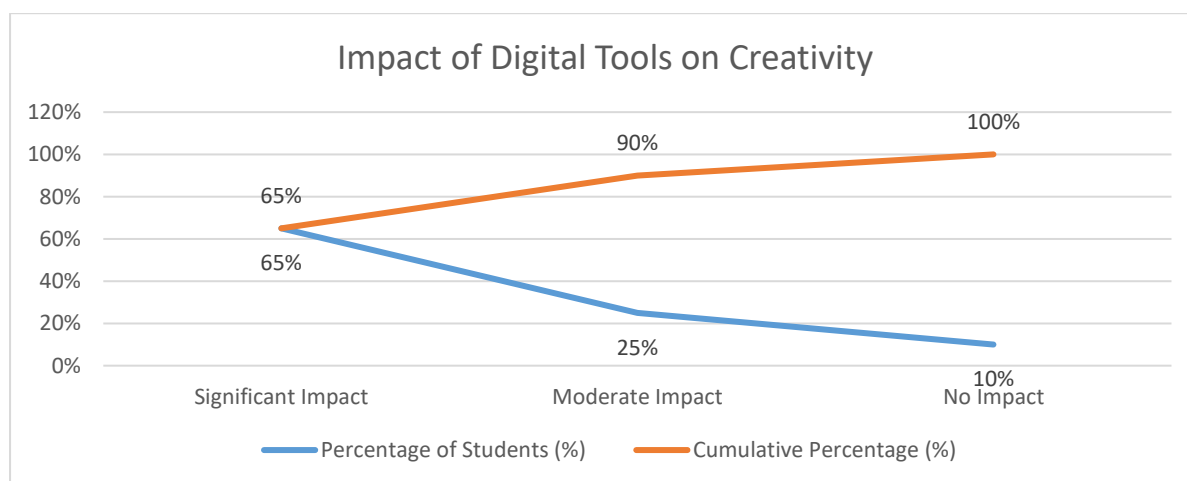

FIGURE 3: IMPACT OF DIGITAL TOOLS ON CREATIVITY

In experimenting with digital tools, students claimed they could easier and with more accuracy carry out their ideas than when using physical materials. Not all the responses were hugely positive. Some of the students were calling for a balance between digital tools, which might put a barrier between physical mediums and them, and where physical mediums are important to develop tactile skills. Students' perception of digital tools are compared to traditional art techniques in Table 2, showing they both offer speed and flexibility of the digital tools, but this is complimented by their materiality and tactile experience in the traditional techniques.

TABLE 2: COMPARISON OF DIGITAL TOOLS AND TRADITIONAL ART TECHNIQUES

Factor	Digital Tools	Traditional Techniques
Flexibility	High	Low
Tactile Experience	Low	High
Learning Curve	Moderate	High
Time Efficiency	High	Low
Cost of Materials	Low	High

In the findings, it also reveals that the use of digital tools has made the collaboration of students more efficient. Particularly, cloud-based platforms have simplified working together in group projects as they allow people to share work life. While working with peers on digital platforms like Google Drive and Adobe Creative Cloud has helped students to carry out smoother collaboration and feedback exchange. But some students noted that the dependence on digital communication could have a lack of personal interaction, thereby curtailing the scope of peer critiques and group discussion. The integration of digital tools into the curriculum, as further interviews with faculty members show, have proven to be mixed. Today, some of the instructors found that digital tools helped make teaching an interactive and engaging affair, while others voiced apprehension about the lessons required to achieve it. For example, university faculty who had a set way of teaching were unable to change their teaching pedagogy for the digital learning environment. In the end, they emphasized the necessity of combining digital and traditional tricks so that students would obtain a well-rounded education across the arts [15]. Looking at the data on problems faced by students, the bulk of the issues mentioned were around access and training. Although many students were happy with the digital tools their institutions were offering, there were also a considerable number of respondents who reported that there were technical problems, like when software works badly, or the hardware does not work at all. In addition, repeated training on the newest software updates and tools was a constant. Institutions with smaller funding or located in rural areas, where students might not have reliable internet access, this became particularly an issue of access. Students report barriers for usage of digital tools as shown in Figure 4, technical and no ability of high-end devices, and not enough training, as the most common. Providing these findings, these institutions must invest in infrastructure and sufficient training so that regardless of any student integration of digital tools, all the students can benefit equally from it.
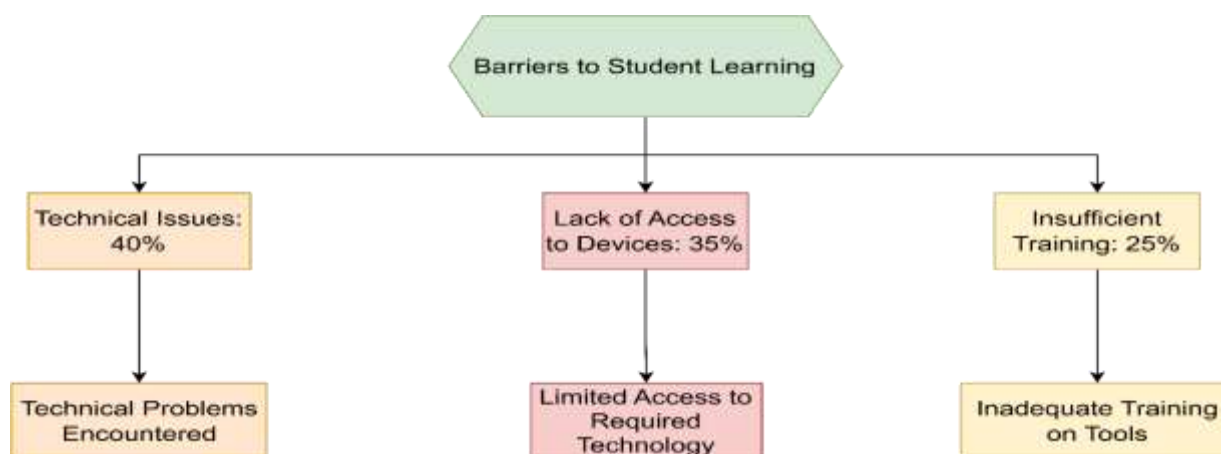

FIGURE 4: BARRIERS TO DIGITAL TOOL USAGE

For pedagogical purposes, faculty highlighted the fact that students — whether or not they win design — are provided with opportunities to get both traditional and digital artistic training. Rather, a hybrid approach incorporating the best of what each of the digital and the traditional have to offer is suggested. Such an approach would permit students to acquire technological capabilities that the participants of the digital art world require at present, while keeping in mind the basic artistic skills necessary for creative expression. Consistent with previous work, these results match the idea that digital tools can help arts education, most importantly, innovation and collaboration. Despite this, access, training and balancing of digital and traditional practices exist as major issues that must also be overcome to truly harness the best of leveraging digital tools into arts curricula.

V. CONCLUSION

In conclusion, digital tools indeed have become the way forward and have turned arts education in higher institutions to be thematic with new creativity, collaboration and accessibility. The findings of this study indicate that these tools have broadened students' and teachers' experience of learning art much more effectively, more flexibly and more dynamically [13].

Finally, future research should examine the impact that integration of these digital tools will have in the future on student learning outcomes and teaching strategies of the faculty. In addition, educating such educators to integrate digital tools into the curriculum in an uncompromised manner to the extent their curriculum is predicated on traditional artistic methods, institutions should invest.

REFERENCES

[1] N. Ularu, "The impact of technology in reshaping artistic education," in *Sciendo eBooks*, 2020, pp. 16–27. doi: 10.2478/9788366675193-002.

[2] M.-D. González-Zamar and E. Abad-Segura, "Digital Design in Artistic Education: An Overview of research in the university setting," *Education Sciences*, vol. 11, no. 4, p. 144, Mar. 2021, doi: 10.3390/educsci11040144.

[3] K. Prykhod'ko, O. Khil, O. Pobirchenko, O. Umrihina, V. Kalabska, and O. Bobyr, "Problems and Prospects for the art Education development in higher educational institutions based on big data technologies and digital platforms," *Journal of Curriculum and Teaching*, vol. 11, no. 9, p. 81, Dec. 2022, doi: 10.5430/jct.v11n9p81.

[4] E. Ahmed *et al.*, "Recent advances and challenges in mobile big data," *IEEE Communications Magazine*, vol. 56, no. 2, pp. 102–108, Feb. 2018, doi: 10.1109/mcom.2018.1700294.

[5] R. Asif, A. Merceron, S. A. Ali, and N. G. Haider, "Analyzing undergraduate students' performance using educational data mining," *Computers & Education*, vol. 113, pp. 177–194, May 2017, doi: 10.1016/j.compedu.2017.05.007.

[6] S. Davis and L. G. Phillips, "Teaching during COVID 19 times – The experiences of drama and performing arts teachers and the human dimensions of learning," *NJ*, vol. 44, no. 2, pp. 66–87, Jul. 2020, doi: 10.1080/14452294.2021.1943838.

[7] E. D. Madyatmadja, D. J. M. Sembiring, S. M. B. P. Angin, D. Ferdy, and J. F. Andry, "Big Data in Educational Institutions using RapidMiner to Predict Learning Effectiveness," *Journal of Computer Science*, vol. 17, no. 4, pp. 403–413, Apr. 2021, doi: 10.3844/jcssp.2021.403.413.

[8] M. Nasiri, B. Minaei, and F. Vafaei, "Predicting GPA and academic dismissal in LMS using Educational Data Mining: A case mining," *Paper Presented at the 3rd International Conference on eLearning and eTeaching, ICeLeT*, pp. 53–58, Feb. 2012, doi: 10.1109/icelet.2012.6333365.

[9] O. Troisi, M. Grimaldi, F. Loia, and G. Maione, "Big data and sentiment analysis to highlight decision behaviours: a case study for student population," *Behaviour and Information Technology*, vol. 37, no. 10–11, pp. 1111–1128, Jul. 2018, doi: 10.1080/0144929x.2018.1502355.

[10] C. R. ValeNcio, L. M. M. Silva, W. Tenório, G. F. D. Zafalon, A. C. Colombini, and M. Z. Fortes, "Data warehouse design to support social media analysis in a big data environment," *Journal of Computer Science*, vol. 16, no. 2, pp. 126–136, Feb. 2020, doi: 10.3844/jcssp.2020.126.136.

[11] L. Da Xu and L. Duan, "Big data for cyber physical systems in industry 4.0: a survey," *Enterprise Information Systems*, vol. 13, no. 2, pp. 148–169, Mar. 2018, doi: 10.1080/17517575.2018.1442934.

[12]   Mohammad, A. A. S. ., Al- Daoud, K. I. ., Al- Daoud, S. I. S. ., Samarah, T. A. ., Vasudevan, . A. ., & Li, M. . (2024). Content Marketing Optimization: A/B Testing and Conjoint Analysis for Engagement Strategies in Jordan. Journal of Ecohumanism, 3(7), 3086 –. https://doi.org/10.62754/joe.v3i8.5066

[13]   J. Black and K. Browning, "Creativity in Digital Art Education teaching Practices," *Art Education*, vol. 64, no. 5, pp. 19–34, Sep. 2011, doi: 10.1080/00043125.2011.11519140.

[14]   Fan Q, Wider W and Chan CK (2023) The brief introduction to organizational citizenship behaviors and counterproductive work behaviors: a literature review. Front. Psychol. 14:1181930. doi: 10.3389/fpsyg.2023.1181930

[15]   M.-D. González-Zamar, E. Abad-Segura, A. L. De La Rosa, and E. López-Meneses, "Digital Education and Artistic-Visual Learning in Flexible University Environments: Research analysis," *Education Sciences*, vol. 10, no. 11, p. 294, Oct. 2020, doi: 10.3390/educsci10110294.