# Enhancing Artistic Skills with TPSACK Courseware: Supporting Art and Design Education (ADE) Students' Professional Development in Artistic Skills by Using Technology

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**Abstract**
Art and Design Education is a focused area involving the nature of knowledge of technology, pedagogy, and content, as well as the component of knowledge of artistic skills. Without these skills, understanding the art would be difficult, and unable to teach the arts properly. The objective of this study is to study the Art and Design Education (ADE) students in developing their artistic skills and knowledge by using specially designed TPSACK courseware. The TPACK framework study has aided in the development of TPSACK courseware, which explores the artistic abilities needed by students of Art and Design Education as future teachers. Complex functions and interactions between the four bodies during the learning phase are explored in the development of the TPSACK courseware. The interaction between these four components creates flexible knowledge to successfully include technical abilities in the learning process. This research employs a 2 x 2 design of factorial research with a quantitative approach, and SPSS was utilized for analysis. A descriptive analysis was carried out to analyze the drawing. The findings of the research indicate that combining technology with artistic skills might significantly increase students' artistic skills and knowledge. To improve their artistic abilities among them, the TPSACK courseware's mean score is important. In conclusion, the work presents a descriptive model of TPSACK courseware to improve artistic skills knowledge as well as the knowledge of technology, pedagogy, and content. The findings have indicated that the impact of the TPSACK courseware was

statistically significant and there is a significant difference between the experimental and the control group.

**Keywords**: Artistic Skills, Factorial Research, Knowledge, TPSACK Courseware, Technology in Education.

**Introduction**

The introduction of technology into the teaching and learning process has caused a significant transformation in the educational system. The most frequent way to describe the changes in the educational system is as a larger acceptance of active learning based on the use of technology. The use of technology as one of the tools to be used in the teaching and learning process has been advocated by the Malaysian Ministry of Education (MOE) since January 1999. The benefits of using technology in art education involve improving the quality of learning or literacy skills, quality of teaching, and diversifying methods of teaching among teachers to increase students' interest. The lesson will also be more informative and the level of understanding will be improved as the clarification is made using the technology. This helps them in keeping their skills up to date by converting modern applications in the form of instructions. Supported by Khushk (2023), technology can be utilized to create simulations, visualize abstract concepts, and gather and analyze data, leading to the development of problem-solving, critical thinking, and collaboration skills. This scenario affects the visual art area which involves the Art and Design Education program at the Faculty of Education, Universiti Teknologi MARA. In the art area, it was considered important that the Art and Design Education (ADE) students should focus on thinking activities and look for different ways to stimulate the process of their future student thinking. This helps in understanding the profession and fundamentals of the art. It further enables the ADE students for example to design a layout, which helps them in teaching preparation before starting an activity. A study has also reported that problems cannot be solved by art teachers if they are not able to generate new concepts and thinking and do not motivate new ideas.

According to Koster et al (2008), the profession of teaching needs teachers to motivate the students in their thinking process to make them think creatively with different methods. Inducing proper skills and relevant knowledge would enable the students to conduct meaningful learning and teaching session. This indicated that teachers who have not gained expertise in skills and art are not aware of what to teach which is referring to the subject matter (Chua et al., 2003). Kieran (2012 cited in KV et al., 2023) suggested that appreciation of art is an intrinsically valuable skill that helps individuals to build noble character, because when one is engaged with artworks, it fosters imagination, and helps him to critically examine aesthetic qualities of artworks, its artistic originality, emotional expression, depth, and moral understanding. To develop their understanding of the art and to be able to educate their future students, the ADE students need to be properly trained. They also play an important role in inspiring their future students in helping them understand the concept of art and to achieve this concept, these ADE students need to be fully prepared. Training and guidance play an important role in the cultivation of artistic skills in ADE students to be implemented at an early stage. Hudson (2010) added further that the growth of teachers' imagination and aesthetics must be improved at different points to reveal skilled teaching during the training and learning process. By gaining a set of artistic skills, these teachers enhance their knowledge of the subject matter which gives them confidence in teaching and acquiring more effective knowledge. Teachers without a deep understanding of artistic skills will lead to the lesson conducted in the classroom without clear guidance (Teo, 2009).

Teachers working in the art field need knowledge of artistic skills to allow students to understand the skillful application of drawing which will help them to understand the perception. That way, learners would learn the knowledge related to skills and how to integrate it into their tasks. The ADE students will face an enormous role in explaining the subject matter to the class when carrying out the lesson. The effectiveness of the subject delivery depends on how well the subject matter is understood and this may be done when a highly qualified person is placed to teach the subject. It has been reported in a study, students tend to lose interest only if the teacher does not deliver the knowledge closed in the subject matter due to lack of creativity and lack of technological integration ways. The integrated technology in the classroom depends upon the artistic skills embedded, which ultimately influence the student learner's beliefs and ideas. The development of pedagogical conditions for the formation of artistic and pedagogical competence in future fine arts teachers and the organization of a pedagogical experiment to determine their effectiveness seems promising (Tomashevskyi et al., 2022).

The goal of this study is, therefore, to develop and propose the need for the new components in the TPACK framework by integrating artistic skills as a methodology to identify the underlying fundamentals of the existing framework and, on that basis, the knowledge required to improve the TPACK to TPSACK framework would contribute to an interesting and influential theory in the study of the artistic development. The newly proposed TPSACK framework with the incorporation of artistic skills would diversify the skills development with technology by concentrating not only on the growth of the ADE students' creative ability but also on enhancing the students' existing artistic skills. Therefore, this research has been designed to answer the question of how the ADE students' artistic skills and knowledge are enhanced based on the TPSACK framework through the courseware. It is further elaborated thoroughly in this research.

## Literature Review

The chapter has examined the TPACK framework to further understand the origination of the TPSACK courseware and its impact on ADE students specifically on artistic skills knowledge professional development. Theories related to the emergence of the TPSACK framework in the learning and development of artistic knowledge among ADE students are discussed further. Also, the literature review has explained the development of TPSACK courseware from TPACK framework and other related sub-topic.

## Technology in Education

The emergence of a change in the Malaysian education system involving learning methods based on the use of technology development is growing increasingly in line with technological development involving 21st-century learning. Learning with technology has become more relevant to the emergence of change in the Malaysian education system. High technology development now allows information to move unlimited and provides no boundaries. Access to the material provided around the world can be gained with just one click as all information is available through electronic media. Therefore, this sophisticated development should also change and circulate the common view for those who are passionate about education. Moreover, it requires engagement from those who are always aware of the changes that are taking place.

It is important for the users involved in the educational area, particularly the ADE students to be successful in their future career as an art teacher or educator, and for that

development in technology, pedagogy, and content has been necessary. Educators bear a heavy responsibility in helping the government accomplish its objectives in the 9th Malaysian Plan, namely to generate excellent future generations. Art has always been closely linked to technology, and new media on various creative instruments, to provide for the arrival of the internet (Cuadra 2019). As such, the ADE students must diversify their teaching delivery methods to better understand their future students. Supported by Ishiguro and Takada (2015), people with more extensive art experience develop competence in artistic creation and consider their own creations when appreciating others' artwork. Users receiving instruction in technology integration are more likely to bring technology into the classroom. According to research conducted by Bille and Jensen, (2018), reasonable artistic education can have a significant impact on careers because of the importance of technical skills, networks, and signaling effects. Enhanced global processing and more fluent switching between local and global levels of hierarchical stimuli predicted both drawing skills and artistic group membership, suggesting that these are beneficial attentional mechanisms for art-making in a range of domains (Chamberlain et al., 2015).

Visual arts training is linked to flexible attention to local and global levels of visual stimuli. These aspects of professional development, if explored, practiced, and rigorously evaluated, can establish a culture of quality professional development for art teachers (Allison et al. 2013). Recognizing the incorporation of technology in the classroom among ADE students requires constant and well-planned professional development. With this, the ADE students need to equip themselves with the skills of using technology such as computers and new media to help improve the teaching process of Visual Arts Education (VAE) subjects in the future.

**Artistic Skills**

Artistic skills knowledge has been playing a significant role in the art profession particularly which requires certain artistic skills in creativity and these skills aid in bringing more creativity to the arts. Artistic creation happens in a state of deep concentration and self-forgetting and flow seems to have a specific purpose within artistic processes: triggering, facilitating, and guiding the flow of creation (Chemi, 2016). The process has gained importance as it provides with certain direction for generating and developing the ADE students' ideas based on their observations. Artistic skill knowledge is very significant in the Visual Art Education subject, particularly in drawing activity and it is used in the process of creating works of art. The process is important as it provides the ADE students with direction to generate and develop their ideas based on their observations.

The artistic skills knowledge requires the knowledge of foundation which has been underlined in understanding the techniques and unique concepts as shown in Figure 1. The requirements for the development of artistic skills and knowledge are important for ADE students to completely understand the concept. The requirement is based on the four steps of instructions to meet the needs of every individual.



Figure 1. The Artistic Skills Foundation
Source: *Modul Pengajaran dan Pembelajaran Pendidikan Seni Visual PPK* (2002)

According to Gopnik (2012), high artistic skills and knowledge is needed by teachers which enable them to teach efficiently. Students to better understand the meaning need teachers' opinions and guidelines which will assist them in their creative artwork and how they can effectively act. It is determined that the artistic educational competence of future school teachers is shaped during the students' mastering of educational components (academic disciplines, term papers, internships) in higher education institutions (Kovalchuk et al., 2022). The guideline provided by the teachers helps the students to explain the embedded meaning in the artwork. Teachers not implementing the artistic skills knowledge would not be able to teach according to the designed curriculum and would face difficulties in transferring the meaning of the subject matter.

The integration of artistic skills has been useful in aiding the ADE students in examining and exploring the context of the subject matter with respect to the artistic skills needed to be followed. The ADE students must use their skills to effectively transfer effective teaching and learning practices related to the subject. They must know the skills of arts needed by students to learn the art. So, it is important that the ADE students must understand artistic skills clearly to teach perfectly. Therefore, art not only involves knowledge rather it is a style of understanding the significance of art to acquire skills in the task (Gopnik, 2012). It is vital to ensure an effective learning and teaching session are created by future teachers to embrace the future.

**The Framework**

The framework in the study led to suggestions on the importance of technological integration with the understanding of proper constructs technology, pedagogy, and content knowledge (See figure 2). This framework supported by Mishra and Koehler in providing information has not been considered an adequate framework in delivering information for improving the artistic skills of the ADE students and adding the artistic skills factor in the preparation and development of the students. Mishra and Koehler (2006) suggested that the framework TPACK does not merely works on the separate role played by the three components of knowledge but a complete understanding takes place when an interplay of relationship exist between them. Only then a meaningful learning process could be evolved. This framework fits in the presence of the ADE students to understand the content, pedagogy, and technology teaching. Technological, Pedagogical, and Content Knowledge (TPACK) has been considered a system for understanding and describing the various types of knowledge needed to integrate technology effectively by the ADE students.
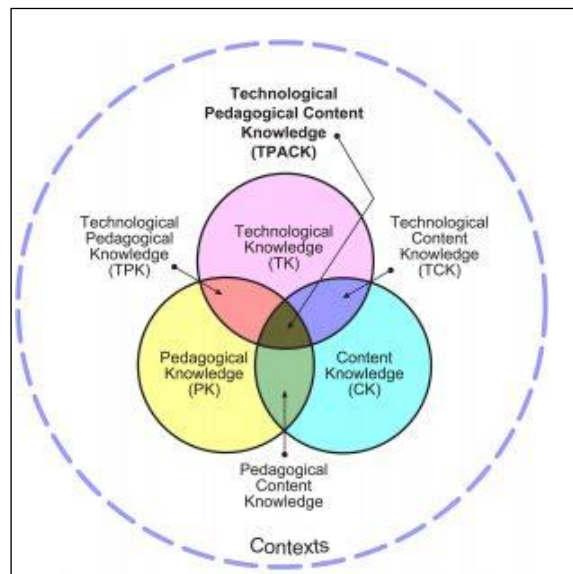
Figure 2. The TPACK Framework and its Knowledge Components

**Mishra and Koehler (2008)**

The extended framework has been focusing on the process of teaching which improves the artistic skill knowledge of the ADE students in the visual art area (See Figure 3). The addition of the skills component in the original framework enhances the performance of learning with technology. The components overlapping have been focusing on technological knowledge (TK), pedagogical knowledge (PK), content knowledge (CK) skills knowledge (SK), and technological, pedagogical, skills, and content knowledge (TPSACK). The importance of artistic skills is heightened to train the ADE students for developing self-efficacy and generating an environment of better art practices with knowledge.
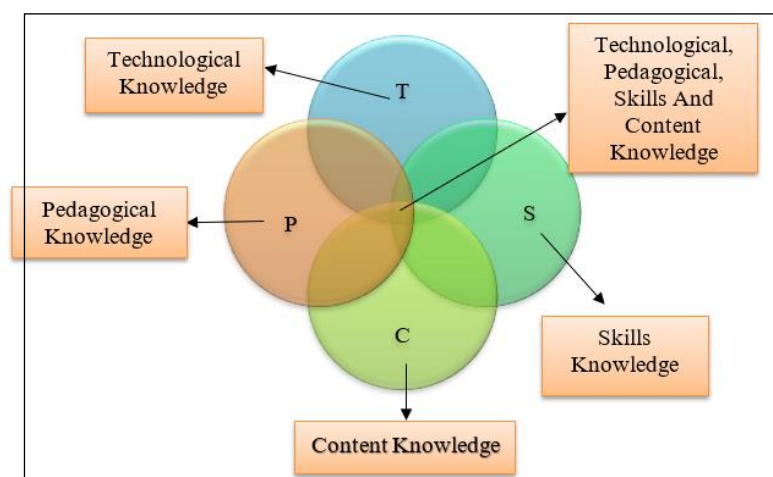


Figure 3. The Technological, Pedagogical, Skills, and Content Knowledge (TPSACK)

With the indulgence of skills in the framework, quality teaching will be produced to aid in the development of the ADE students' artistic skills. Hence, the study has been conducted with the idea to measure the technological, pedagogical, content, and artistic skills knowledge which ultimately enhances the ADE students' artistic skills knowledge.

**TPSACK Courseware**

The courseware has been fully utilized and controlled by the ADE students which enables them to learn by themselves. It is provided with animation for navigation and developed according to the capabilities of the users. Major ranges of possible learning outcomes have been suggested for the identification of the content areas and further assisting the ADE students to understand and combine the easily accessible activities, according to their preferences and learning needs. The courseware has been used as a medium of instructional technology and has been utilized in this study as a function that can be highlighted for identifying the TPSACK of the ADE students.



Figure 4. The interface design of the artistic skills practice

Figure 4 is showing the main shapes provided in the artistic skills practice when the ADE students construct their ideas to create an artwork. The research goal is to demonstrate the value of creative limitations and it allows the ADE students to demonstrate their ability in creating a stunning piece with limited means. This artistic skills practice is the core of the TPSACK courseware that has been developed. It gives priority to the 10 limited shapes so that the ADE students can use them during the process of producing the artwork. With these shapes, the ADE students are challenged to create their unique artwork, within the limitations provided in the exercise. Therefore, they are challenged to create a single piece within a strict set of guidelines, and through this practice, it comes down to pure skills and imagination. Furthermore, color is not provided and the exercise uses only black color to encourage students to produce work in a negative and positive way as the aim of this exercise is to see how the ADE student will perform within limited context.



Figure 5. The interface design of the artistic skills practice

The color of the interface design for the artistic skills practice in Figure 5 is given a red color so the student is motivated to work with the limited shapes offered. This is also to prevent boredom for the student since the form given is minimal. The students can rotate, flip, and duplicate the shapes. However, they are not required to use all the shapes. Scaling is allowed, but proportionally and they are not allowed to skew or free-transform the shapes. Color is not provided and the students will use only the positive and negative aspects of the principles of art as the aim of this exercise is to challenge the students' creativity within limited shapes. The layout is prepared symmetrically as the space is needed for the students to feel free to construct their ideas in the frame provided. The layout is also consistent, simple, and clean and the provided shapes are arranged on the right side to give the student the freedom to work and they can perform their creativity freely.

## Method

The objective of this study was to investigate the effect on the ADE students' artistic skills achievement when using the TPSACK courseware. The intention is to measure the performance scores based on recall scores, memory retention scores, and high levels of cognitive scores. It is also the documentation and conducting of relevant analytical research systematically concerning the development of the artistic skills and knowledge of the ADE students. The primary objective of this study is to analyze the ADE students' artistic skill competency while integrating technology, pedagogy, and content knowledge into their teaching practice. This method employs a 2 x 2 design factorial research as suggested by Creswell (2003) to examine the achievement of two modes of learning as it involves a pretest and posttest for experimental and control groups to achieve the results. This study uses the factorial design method since it has two or more independent variables. The study of interactions between dependent variables and other variables, such as moderator variables, is another benefit of the factorial method. This is since the ADE students were already divided significantly into their respective groups by the university.

The students were then divided into 2 groups which were later identified as the experimental (TPSACK) and the control (TPSACK 1) groups. Both courseware consists of the same items except that the TPSACK 1 courseware did not consist of the 20 artistic questions. The questions are related to the artistic approach as part of artistic knowledge development. The pretest has been used as a tool to determine the capability of two different groups and it is helpful as the scores gathered in the pretest have a rigid link with the independent variable. The post-test and pretest were designed for both the experimental and the control groups. Data has been collected with the help of the TPSACK questionnaire during the application of the quantitative approach.

## Results

The description of effects regarding the courseware has been figured out by the detailed assessment that has been created accordingly to the TPSACK framework in comparison with the calculations of the success of the ADE students to enhance their artistic skills knowledge.

Table 1
*The Number of Students in Each Group*

| Courseware | Number of Students |
|---|---|
| Technological, Pedagogical, Skills, and Content Knowledge – TPSACK 1 (Control Group) | 63 |
| Technological, Pedagogical Skills, and Content Knowledge – TPSACK (Experimental Group) | 67 |
| Total | 130 |

The samples have further classified into two categories that were the control group and the experimental group shown in Table 1. The first group is the control group which has been examined through TPSACK 1 courseware and the second group is the experimental group which has examined the TPSACK courseware.

Table 2
*The Statistical Sample of the Experimental and the Control Group Visual Learning Performance at the Beginning of the Study*

| Visual Learners Level | Group | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| At the beginning of the study | Experimental | 67 | 4.2139 | .42310 | .04519 |
| | Control | 63 | 4.0514 | .33522 | .05707 |

Table 2 shows the results of the *t*-test which has demonstrated important distinctions among the mean scores of both the control group and experimental group to know about visual cognitive level (*p>.05*). Thus, the intensity of visual learning at the beginning phase has identical in the control groups and the treatment. Prior to starting using courseware, particularly by the ADE students, a pretest has taken for both control and the experimental group. On the other hand, posttest had also been done in both groups for example experimental and control for carrying out the session. The efficacy of TPSACK 1 and TPSACK courseware have been determined by descriptive analysis of the data. It further assesses the facts of success in both groups. The posttest mean results were recorded higher, comparatively with pretest results accordingly to Table 2.

Table 3
*The Artistic Skills Knowledge Difference*

| Group | Mean | Std. Deviation | N |
|---|---|---|---|
| Control | 4.5120 | .42809 | 63 |
| Experiment | 4.7304 | .38659 | 67 |
| Total | 4.2210 | .44129 | 130 |

After the statistical analysis, it has been evaluated that artistic skills knowledge regarding achievement between both groups was statistically significant. Table 3 is providing complete information regarding such analysis. The test of the null hypothesis has properly shown that error variance was equal to zero across the developed group from the perspective of the dependent variable.

### The Comparison of Artistic Skills Achievement of Both Groups

The experimental and the control groups have produced a set of artistic skills practice when using the TPSACK 1 and the TPSACK courseware. Among the compulsory items to be explored was the artistic skills practice. Both groups were given the task to create a simple idea progress by using the 10 shapes. The 10 shapes identified are the basic forms for a work to be made.

|  | TPSACK | TPSACK 1 |
|---|---|---|
| HIGH | Mean: 75.5952 | Mean: 75.5814 |
| LOW | Mean: 63.8528 | Mean: 63.2337 |

Figure 6. The Comparison of Two Groups Results

According to the analysis conducted (see Figure 6), the results obtained from the post-test have been indicating a clear change in the achievement of the ADE students from the experimental group while using the courseware. The artistic skills knowledge of the experimental group has shown severe changes to become more active as compared to the control group according to the feedback gathered. A slight increment in the achievement has been observed from the overall posttest mean score through the descriptive data. For the experimental group, the posttest mean score has been prescribed at 75.5952 which has been considered slightly higher other than the control group pretest mean score which was 75.5814.

On the other hand, the mean score of the experimental group has been 63.8528 which have been observed slightly higher than the control group which was 63.2337. As mentioned earlier, the descriptive analysis in this study has shown an increment in the level of achievement which eventually has improved the artistic skills after utilizing the TPSACK courseware. The utilization of the learning strategy has been successful in assisting the respondents in organizing and obtaining the knowledge they have received from the results. The results further have shown that an understanding has been developed of the content that has been delivered.

### The Experimental Group Artistic Test Results

The results of the artistic skills knowledge produced by the experimental group are randomly selected and are shown in Figure 7 to Figure 10. The experimental group were showing slight differences in terms of creativity as compared to the control group. The factors that influenced the creation of this group are also due to the way they work, how they choose the shape, and the individual style. These are closely related to their cognitive aspects. In addition, the appreciation and how they value the artwork depends on their own intuitive feelings. It can be said that the formation of attitude, interest, and ability to make own choices are also closely linked to the affective aspect. The first assessment that can be made when evaluating the experimental group students' artwork is the observation of the artwork's connections to visible annotations. Line as the element of art is the main choice in preparing the 10 shapes. The 10 shapes are only using black so that the students could focus on the production of a creative work and not be burdened with the feelings of wanting to explore colors they think can fit with the artwork. In addition, harmony and variety contribute to making the students' artwork interesting and easy to understand. Black shapes are used to create a lofty appearance and vibrant to resemble an intimate atmosphere.
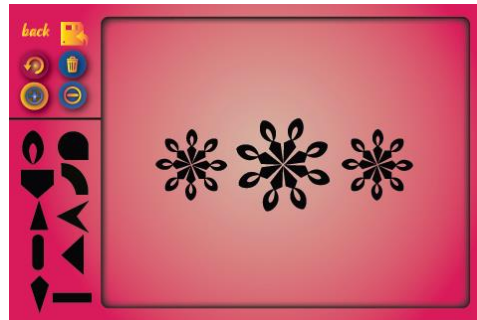
Figure 7.The artistic skills practice pretest of student #1

The black shapes are placed on a contrasting red background to create lights (see Figure 7). The artwork also shows the elements of space to give imagination of distance and the size of the shapes can be adjusted to create a high and low appearance (see Figure 8). In terms of form, the student's artwork can be described as using various forms to portray visual aesthetics.
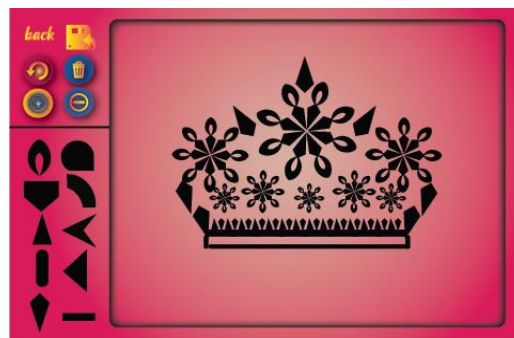


Figure 8. The artistic skills practice pretest of respondent #1

Figure 9 is the initial ideas of the students during the pretest process and Figure 10 is the results of the posttest of the same student after the treatment.



Figure 9. The pretest of artistic skills practice respondent #2

Figure 10. The posttest of artistic skills practice respondent #2

The shapes are repeated to create movement so the visual effect emerges are more free and spontaneous to avoid dull and boring artwork. Apart from balance, the ADE students from the experimental group also emphasized the principle of rhythm and movement using curved and small shapes. The movement in the merging lines illustrates the feelings and actions in the artwork. The artwork also refers to the emphasis principle to make the objects appear larger to create a focal point.

**The Control Group Artistic Skills Test Results**
The artistic skills results of the control group are showing a slight difference from the experimental group as the students were using limited shapes to create the artwork. The artwork does not utilize most of the provided shape and thus the artwork produced is showing monotonous composition that leads to static and flat results. This is due to the limitation of knowledge and the style of work from the control group. The students only focus on the rhythm principle and the repetition of shapes is done to produce the artwork as shown in Figure 11.
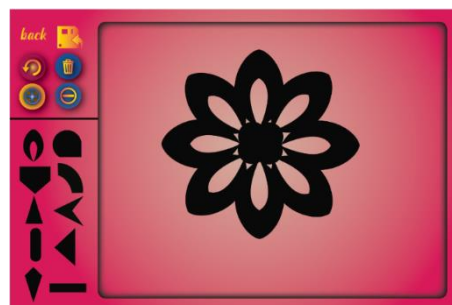


Figure 11. The artistic skills practice pretest of respondent #3

Figure 11 is the pretest results of the ADE students from the control group and Figure 12 is the posttest results of the artistic skills knowledge of the same student after the treatment. The test provided to the control group is similar to the experimental group.
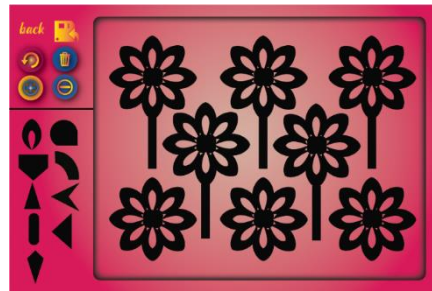
Figure 12. The artistic skills practice pretest of respondent #3

However, some of the students managed to utilize more shapes and produce an interesting composition as shown in Figure 11. Even though the artwork in Figure 12 are showing less usage of shape yet the composition of a larger and smaller object has successfully shown perspective and therefore the artwork is interesting to perceive. With the use of smaller objects on top and larger objects at the bottom, the artwork managed to spark aesthetic value through the illusion of perspective created.



Figure 13. The artistic skills practice pretest of respondent #4

Another example of the pretest results of the control group is shown in Figure 13 and the posttest result is in Figure 14. The artistic skills results of the control group are showing significant differences from the experimental group. Therefore, the knowledge of artistic skills is vital to create interesting artwork to prepare students for their future career in teaching the Visual Art Education subject.
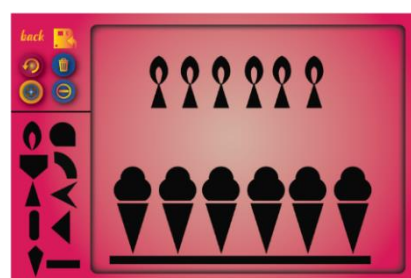


Figure 14. The artistic skills practice pretest of respondent #4

The operation of various thought processes is referred to as the thinking of cognitive ability of the students. The thought processes associated with artistic procedures tend to include intuition, imagination, creativity, expression of reasoning ability, perception, inventiveness, and problem-solving skills. The growth in positive social skills in the form of self-control, collaboration, social tolerance, self-confidence, conflict resolution, and empathy

are promoted using certain art activities. The benefits of using the artistic approach in studies are not just gifted or talented, but rather demonstrating the benefits to all the students. The students, who are at greater risk of completing their education (educationally and economically disadvantaged youth) can develop social competencies by playing key roles in the field of arts.

## Discussions on Findings

The findings have indicated that the impact of TPSACK 1 and TPSACK courseware was statistically significant and there is a significant difference subsist between the proficiency of computers as a support tool to enhance soft skills. Moreover, the knowledge test along with the artistic skills practice has increased the interest of the ADE students. Therefore, it is highly recommended that the use of computers along with their extensive applications should be enforced in the learning environment. Furthermore, the results of the study have shown a positive and significant increase in the learning and the adaption capability of the ADE students in terms of grasping the artistic skills and knowledge that is meant to be delivered while conducting the session.

The framework of TPSACK has been developed and is an extended form of the TPACK framework. In this study, the courseware design has been used for capturing the artistic skills and knowledge of the ADE students. The extension of the TPACK to TPSACK framework has filled the research gap which is the artistic skills knowledge and it has been identified that the skills can be generated with technology to enhance artistic knowledge among the ADE students. Also, the achievement level has been indicated as well throughout. Moreover, the study indicated a similar trend of artistic skill knowledge within the ADE students.

## Suggestions for Further Research

The results from the study are helpful in providing support for enhancing the artistic skills and knowledge of the ADE students. The increment in the achievement of artistic skills and knowledge has been obtained by showing a positive data analysis from the ADE students. Further studies must be conducted about students which investigate the approaches that are helpful and appropriate to the present style of learning. The results of the study have shown a positive response which is helpful in enhancing academics and especially the arts area.

The recommendations which are helpful for improving this study are: the critical and creative skills of thinking should be integrated with the nature of the activities that were provided in the courseware. These activities will be helpful in solving the problem through their own skills and knowledge. Elements and principles of arts were used to test the respondent at that moment which is the foundation of art education. History, communication of arts, and segment of craft have not been completely shown in the content of the questions. After this, the mentioned area should involve the presentation of the content. In such a case, the overall content of the VAE subject has not been shown in the content of the question.

## Conclusion

This study has concluded that the design of courseware based on the TPSACK framework to hasten the artistic skills knowledge acquisition has inspired ADE students. Findings show that there is a significant difference subsist between the proficiency of computers as a support tool to enhance soft skills. Moreover, the knowledge test along with the artistic skills practice has increased the interest of the ADE students. Therefore, it is highly

recommended that the use of computers along with their extensive applications should be enforced in the learning environment. Furthermore, the results of the study have shown a positive and significant increase in the learning and the adaption capability of the ADE students in terms of grasping the artistic skills and knowledge that is meant to be delivered while conducting the session.

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## References

*Journal Article*

Allison, A. (2013). No Art Teacher Left Behind: Professional Development that Really Matters in an Age of Accountability. https://doi.org/10.1080/10632913.2013.826042

Bille, T., & Jensen, S. (2018). Artistic education matters: survival in the arts occupations. https://www.researchgate.net/deref/http%3A%2F%2Fdx.doi.org%2F10.1080%2F10632913.2013.826042

Bernaschina Cuadra, D. (2019). ICTs and Media Arts: The new digital age in the inclusive school. Alteridad, 14 (1), 39-50. https://doi.org/10.17163/alt.v14n1.2019.03.

Chamberlain, R., & Wagemans, J. (2015). Visual arts training is linked to flexible attention to local and global levels of visual stimuli. Acta Psychologica. https://doi.org/10.1016/j.actpsy.2015.08.012

Chemi, T. (2016). The Experience of Flow in Artistic Creation. DOI:10.1007/978-3-319-28634-1_3. Spriner International Publishing.

Chua, P.T., Crivella, R., Daly, B., Hu, B. N., Schaaf, R., Ventura, D., Camill, T., Hodgins, J., & Pausch, R. (2003). Training for physical tasks in virtual environment in virtual reality. Journal of Research on Technology in Education.

Cresswell, J.W. (2003). Research design. Qualitative and quantitative and mixed methods approaches. Second Edition. Sage Publications, Inc.

Gopnik, B. (2012). Aesthetic science and artistic knowledge. Aesthetic Science. Connecting Minds, Brains, and Experience.

Hudson, P.B., Hudson, S.M., Lewis, K., & Watters, J.J. (2010). Embedding gifted education in preservice teacher education: A collaborative school-university approach. Australasian Journal of Gifted Education.

Ishiguro, C., & Okada, T. (2015). The Effects of Art Experience, Competence in Artistic Creation, and Methods of Appreciation on Artistic Inspiration. Cognitive Science.

Khushk, A. (2023). Technology Innovation in STEM Education: A Review and Analysis. International Journal of Educational Research and Innovation.

Kovalchuk, L., & Yavorska, K. (2022). Artistic educational competence of future primary school teachers: essence, components, ways of formation. Visnyk of the Lviv University. Series Pedagogics.

Koster, B., Dengerink, J., Korthagen, F., & M. Lunenberg (2008). Teacher educators working on their own professional development: goals, activities and outcomes of a project for

the professional development of teacher educators. Teachers and Teaching: theory and practice.

KV, L., & Venukapalli (2023). The personality predictors of art preferences in children. European Journal of Education and Pedagogy. https://doi.org/10.24018/ejedu.2023.4.2.607

Teo, T. (2009). Modelling technology acceptance in education: A study of pre-service teachers.

Computers and Education. https://doi.org/10.1016/j.compedu.2008.08.006Get rights and content.

Tomashevskyi, V., Digtiar, N., Chumak, L., Batiievska, T., Hnydina, O., & Malytska, O. (2022). Artistic and Pedagogical Competences of the Fine Arts Teacher: an Adaptation to the Postmodern Society. Postmodern Openings.