Digital Tools: Enhancing Painting Skills among Malaysian Secondary School Students

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ABSTRACT
Digital tools refer to software applications in the production of artworks particularly in painting. Digital art work is materialized by using computers, software and a combination of computer peripherals such as tablet support. With the aid of electronic equipment, digital artists manipulate pixels or coloring with light to compose the work and traditional artists manipulate paint or ink as a medium for the same purpose. This study seeks to explore the construction of painting using digital media in four aspects of productive dimension, namely: composition, color manipulation, interpretation and creativity. Moreover, this study aims at examining to what extent digital tools can assist in building painting skills among secondary school students in Malaysia. The group's production of two painting types, digital and conventional was analyzed to determine the effects of treatments on students' skills. Findings show that students construct better paintings, both digital and conventional paintings, upon their mastery of the digital media. This implies that digital media may be an effective means to help students improve their skills in both conventional and digital painting.

INTRODUCTION
Painting is a main form in the visual arts. Traditionally, paintings are prepared byapplying paint pigment onto the surface of the canvas using various painting techniques. The paint strokes effects on canvas can be seen through the direct process . The development of a painting is not only associated with the use and experimentation of various techniques, but also the application of various materials or non-conventional media such as computers. Painting using the computer as a medium is known as digital painting.

Digital painting is a generating painting created using a computer. Digital painting is processed electronically using paint software. The processing output is displayed on the screen. It looks like a conventional painting that uses tools such as pencil, pen or brush. All these painting tools are found in the paint software. More and more visual artists today who tend to make the computer not only as a tool to draw, but also as new media that can generate an attractive visual art through the presentation, editing and exploring various ways of arrangement for art works (Hearn & Baker, 1997; Lewis, 1984).

In the visual arts traditional methods, the artwork is produced using the media directly on a support material. A painting produced when a pigment is processed directly on the canvas, which was prepared in a certain size. Displayed oil paintings have the same dimension either at the exhibition hall or in the studio. Pigment remains on the canvas, but only slightly different colors depending on the time and the lighting around the perimeter. This differs from digital painting designed or prepared using a computer. The production process occurs on one computer only. While the final works may be displayed through projection system that transmits images through a monitor or projector. The end product can also be displayed on different output and medium such as printed matters or video (Prater, 2001; Wilson, 1986).

The computer monitor is like a canvas during the process of art production. The size of the work depends on the size of the monitor that is calculated based on the number of pixels, unlike the works on canvas that are measured using the metric or imperial units. While in terms of color, the hue seen on the monitor may be different when transferred to other display medium because of different concentrations. Due to its digital form, it can be stored as files. Digital painting file size are usually large and require large storage space. Like traditional painting, the process usually involves the creation of a long experimentation and evolution of artists' ideas (Wong, 2005).

Gooch, Coombe, and Shirley (2007) noted the digital art painting depends on representation and abstract value. In the process of painting production, two basic tasks must be done by a painter. The first aspect is the creation of brush strokes position, and the second is the brush strokes display. If the brush strokes position is manually created by the artist, it is a program of classical painting. If the brush strokes position is by computer algorithm counting, it is a digital painting system (Gooch et al., 2007).

The application of digital coloring technique allows the artist to create brush strokes on the surface of another image. In fact, the image source can also be blurred. The background painting can be manipulated to obtain a more artistic effect. This technique allows the paintings to be constructed in layers. Painting special effects such as various brushes, color mixture between layers and strokes joining is also possible. Blending is used to simulate the color in varying degrees of opacity.

Technology exploitation without obstacles or medium limitations can lead to creative invention. Raimes (2006) recognizes that the computer is now equipped with an impressive level of processing power, screen capability of displaying billions of colors and a high resolution printer. This enables economical price of color images production. This situation allows anyone to become a digital artist. Digital art as a new media is reinforced by the existence of the internet. This means that the digital art production process is not only convenient, but also facilitates the end product dissemination. It provides an opportunity for artists to exhibit their work to a global audience immediately. These factors make the software and the internet as a primary source for those interested in digital art (Wands, 2001).

Do Digital Tools Enhance Painting Skills Among Secondary School Student In Malaysia?
The School Inspectorate of the Ministry of Education found that students are unable to apply theory in practical activities, especially in producing creative and innovative art. Students were found to be less able to exploit the senses in interaction with the environment and materials. This affects the development of visual perception and imagination to produce art works that are creative and innovative. Beside less creative, the report shows the students are unable to make a critical interpretation (Hassan Sulaiman, 2000). Producing painting requires the compositions skills such as sketching, drawing and coloring. The report found that Malaysian students are not proficient in those skills.

The question is whether students are willing and able to produce paintings using software and digital equipment? To what extent are students able to master the tools and digital medium in their paintings? The problem is, does digital equipment help to improve cognitive and psychomotor skills in the production of either conventional or digital painting?
In this context do digital art equipment help to improve cognitive and psychomotor skills of students in producing conventional painting. Fine art design requires the use of brush strokes movement, drawing and coloring tools spontaneously (McNaughton, 2006). This process requires students to master use of drawing and coloring tools, especially when making brush strokes with wet color.

The shape size in painting display is important. Shape composition is a significant problem among students. Students cannot compose it, especially on the canvas area itself. One example is when a rat behind is larger than a cat in front (Ashcraft, 1989). The description refers to the mind or visual imagery. The composition process is to collect and create the images in painting. To create a still life or landscape students need to arrange the setting in which subjects are to be drawn, choose the background, color and lay out the lighting as required. This process continues to the determination of the space in placing the subject, the size of the subject in space and how much emphasis should be given to the different elements (Betti & Sale, 1980; Monahan, Seligman & Clouse, 2004; Smith, 1996).

The sketch composition process is the first step in painting. Composition is the process of arranging different elements of subject on paper. Focal points will be concentrated in key areas. The most important thing in determining the composition idea is the point of view, how many subjects to be included and the overall shape appearance. The whole process requires a lot of small sketches and showing an overall arrangement for each view. The final selection of compositions will be redrawn on larger paper and be more detailed. The shape and painting size is an important component in the image composition. It refers to the position either vertical or horizontal. In this context, students have difficulty in making a lot of experimentation of the early compositions and find it difficult to determine the beginning. Conventional painting clearly has to follow the chronological order and is a difficult task for students (Betti & Sale, 1980; Monahan et al., 2004).

Painting requires technical skills because the end product cannot be expected. Skills start from the first step of a simple single color to the wet in wet washes technique. Success depends on the skill and bold attempt with brush

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and paint colors through manual dexterity and hand-eye coordination. Individuals need sufficient knowledge and skills to produce a painting. Watercolor painting for instance has a bright translucent color, moist and appealing, but no doubt it is a medium that is quite difficult to master (Gair, 1996; Smith, 1999).

Failing in doing painting resulted in much crumpled drawing paper. Watercolor washes technique uses a lot of water content. Color applications are built on paper using one by one wash layers. However, to get a certain effect and prevent colors from being mixed and become stagnant murky color, the painting should be left in one period to enable it to dry between the washes process. This turned out to consume time for each round even though watercolor painting technique is said to be fast (Balldinger, 1960).

To master conventional painting, a lot of paper is required to make the exercise repeatedly. This clearly shows the end product of watercolor paintings cannot be expected or projected. Students should have the ability to control this medium and abide by the accidental combined effects. Large amounts of water are required either for mixing colors or cleaning brushes. Brushes should be washed between each color application on paper. If a little color left on the brush, it will affect the purity of other colors (Gair, 1996, 2004).

Wash technique applications depends on the numbers of colors mixing. If not the work continuity will be affected halfway and students need to stop coloring and need to re- mix the colors. It it difficult to get the proper intensity and color tone similar to the previous one (Balldinger, 1960).Therefore, students need to be proficient to control this medium as well as having sufficient knowledge related to pigment.

Pigments also tend to leave granular effect on the paper surface. The conventional painting washes layering technique only allows a stroke of dark colors on bright colors only. The concept of a watercolor painting is an application of brightest colors followed by darker tones (Distefano, 1999). Another problem is to produce faded colors tone. Lower color tone or faded tone is obtained by adding water to the pigment. Another problem in watercolor is the loss of white, especially when the entire paper has been colored and it is impossible to get back the white background. Thus the white area must be reserved before coloring. This means that there must be proper planning at the early stage (Distefano, 1999). Fortunately, use of other media such as digital application allows white color to be place at the end of the process. It can also be placed spontaneously without planning. But this cannot be done when using watercolors.

Water color medium is water and liquid pigments and it takes time to dry. Therefore to get the absolute white is quite difficult. A high level of liquid pigment stain is very difficult to remove once the stroke has been put on paper (Monahan, 2004; Monahan et al, 2004; Wyeth, 1958).Watercolor painting is said to be a miracle in itself. This leads to the belief or assumption among those who are not familiar or skilled that the medium is only for those who are trained, talented or skilled in this difficult medium (Monahan et al, 2004).

Based on the problems described, it is necessary to do a study to assess to what extent digital software equipment can be applied as an alternative to painting equipment among secondary school students. Drawing software in computer graphics store coloring category in bitmap and vector data. Photoshop files contain both bitmap and vector data. One should understand the difference between these two categories in order to help the process of design and editing digital painting. Bitmap image or technically called raster images use colors grid known as pixels to display the image. Each pixel is provided with location and a specific color value. When working with bitmap images, amendment will be carried out on the pixels and not the entire object or shape (Junger& Mutzel, 2004).

The important issue in bitmap image is the resolution or the pixels number that make up the image. Pixels is a color grid to display the image. It is a dot that is used to produce a variety of image element intensity in the process of creating the bright and dark shadows. Pixel is abbreviation for picture elements. Pixel data of the image can be measured and displayed. With bright colors, clean lines, fine details, pixels art is a contemporary illustration technique. (Adobe Systems Incorporated, 2002; Burns, 2001 Raimes, 2006; Wong, 2006).

Bitmap image is the most common electronic medium for continuous tone images such as digital painting and photography. Bitmap images are capable of displaying the gradation of subtle colored, smooth and subtle aspects of light and dark shading and coloring. Bitmap images contain a fixed number of pixels. Thus details can be lost or appear jagged when the scale is magnified on the screen or printed in a lower resolution than the original design (Adobe Systems Incorporated, 2002; Foley et al., 1993).

Bitmap and vector software applications are equally important to the digital artist. Understanding the operation beside mixing and matching existing techniques allow the exploitation of full potential of digital creativity. A

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bitmap pixel is so fine that it does not appear rectangular; instead it appears in a continuous color tone resulting from millions of pixels color. When using bitmap applications, the artwork will be made on the screen as painting application on paper or on canvas painting using various tools such as brushes and pencils (Adobe Systems Incorporated, 2002; Burg, 2009; Wong, 2006).

Professional software such as Photoshop include a large number of additional controls that allow various aspects including image manipulation, color, texture and variety of filter effects. A single pixel or a whole section can be copied or removed using the eraser. Bitmap application has two basic elements: layer and mask. Mask allows changes of selected areas on the artwork without affecting other areas. Layers allow independent element manipulation. Layers is tiered according to the instruction and can have different transparency or blending mode application. Layers can be copied, duplicated, and can be removed if not needed (Seegmiller, 2007).

PURPOSE OF THE STUDY
This research aims to look to which extent Adobe Photoshop digital tools can assist student as a painting medium. The main goal is to identifying students' ability in producing painting using the digital medium. The feasibility of this digital equipment is viewed from the end output which is the painting produced. In this context four aspects studied: composition, color, interpretation, and creativity in painting.

Major focus of this study is also to examine whether a group of low or moderate category student is a factor of achievement variances in painting production. In addition it is also to examine achievement differences before and after using the digital equipment. All variances are seen from four aspects, namely composition, color processing, interpretation and creativity among students.

OBJECTIVES
This research is guided by the following objectives:
1. To examine digital painting production in four aspects of composition, color processing, interpretation and creativity between the low and moderate category student.
2. To examine conventional painting production in four aspects of composition, color processing, interpretation and creativity between the low and moderate category student.
3.

METHODOLOGY
The research design used is quasi-experimental design with one group pre-test post-test design. Quasi-experimental emphasis on experiments that have treatments, the production measurement and experimental units but did not use random selection to form a comparison. The comparison depend on the different groups which are not similar to each other in various aspects. The impact of a given treatment will be tested (Cook & Campbell, 1979; Creswell, 2008).

In this group, the sample will be divided into low and moderate achievers groups. This design uses a treatment group of intact group to study the effect of independent variables (Stanley & Campbell, 1966). Quasi-experimental design is appropriate under the circumstances to prevent the presence of complications or completely experimental control. The school administration may not want any interference with the intact group or group distribution to form random groups or equivalent samples (Tuckman, 1999).

The study to be carried out requires a sample of all students in a class. Students in this class undergo treatment in manipulating Adobe Photoshop as a digital painting medium. Creswell (2008) states that assigning students randomly into two groups can disrupt the learning process in the classroom. Thus the total sample selection of a class is appropriate to carry out this research. This design actually involves observations and measurements within a period of time before and after treatment. The samples will undergo treatment with two observations (Cook & Campbell, 1997).

The independent variable in this study is a digital painting application that uses Adobe Photoshop to produce a painting. Application leads to visual arts knowledge in general and mainly in painting. The use of software cover the know-how in computing and Adobe Photoshop software applications. The dependent variable is the students' performance in the conventional and digital painting production using test scores. Testing focuses on the composition aspect, color, interpretation and creativity in producing of paintings, and is measured by the scale interval. The study aims to study the changes and analyze the group performance.

Before starting intervention the treatment sample will sit for a test in which they have to produce conventional and digital painting. Students are given a stimulus such as an illustration or photograph. They are required to produce a painting based on that stimulus. The data obtained from this test is regarded as the pre test score.After

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sitting for a pre-test, the sample will be given treatment that is learning how to use digital tools in producing paintings. In this context, students will manipulate Adobe Photoshop as a tool of painting.

To study the changes caused by the independent variable, the sample would sit for post-test after completing the treatment. Post-test requires students to produce a conventional and digital painting base on stimulus images provided.

The image stimulus of the pre and post-test is different but the same theme is given which is landscape. All the participants are required to apply the principle of fine arts in painting production. Elements of art and design principles are the basic and core elements in paintings production. Scores from this test series will be studied to determine the statistical differences between independent variables and the dependent variable.

SAMPLE SELECTION
The subjects consisted of 53 students from two classes. They consisted of social science students taking Visual Art Education subject. Basic selection of 53 students is to avoid mortality while increasing the reliability and validity of the study. The selected students are from the same age group from social science stream but from different schools. They are a homogeneous group of students. The students also study visual art since grade one, and it is an ongoing process until form four. This study was carried out at the Bukit Changgang Secondary School, Kuala Langat, Selangor and Sungai Pelek Secondary School, Sepang, Selangor.

A measurement tool was used to assess the painting is based on theory of art elements and principles of design. Evaluation criteria focus on the composition element, color, interpretation and creativity. This includes the scoring in artwork from pre-test and post-test. It covers conventional painting and digital painting using computer software. The conventional painting artworks were made using drawing paper and tools while digital painting artworks were based on computer application and printout.

The study was conducted on 53 students (low achievers group, n = 24; group of moderate achievers, n = 29) selected from the intact group.

Table 1: *Sample According to Performance*

		Value Label	N
Group Achievers	1	Low	24
	2	Moderate	29

DATA ANALYSIS
Descriptive statistics were used to distinguish the mean scores in comparison between digital and conventional painting. In this study, there is one independent variable (group) and four dependent variables of composition, color manipulation, interpretation and creativity.

RESEARCH QUESTIONS
The following research questions are presented as a guide to address the objectives of the study and data interpretation:
1. Are there any developments in student digital painting in four aspects of composition, color processing, interpretation and creativity between the low and moderate category students after the treatment?
2. Are there any developments in student conventional painting in four aspects of composition, color processing, interpretation and creativity between the low and moderate category students after the treatment?

Research question 1 - Are there any developments in student digital painting in four aspects of composition, color processing, interpretation and creativity between the low and moderate category students after the treatment?
The following Table 2 gives the pre-test results for digital painting of the sample.

Table 2 : *Pre-test Descriptive Statistic for Digital Painting*

Digital Painting Pre Test	Group	Mean	Std. Deviation	N
Composition	low	7.00	1.911	24
	Moderate	9.14	1.620	29
	Total	8.17	2.045	53
Color	low	6.75	1.847	24

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	Moderate	9.03	1.592	29
	Total	8.00	2.048	53
	low	4.08	1.018	24
Interpretation	Moderate	5.28	.960	29
	Total	4.74	1.146	53
	low	4.13	1.076	24
Creativity	Moderate	5.14	.789	29
	Total	4.68	1.052	53

Descriptivestatistics displayed in Table 2 show the different mean between the low and moderate groups in the pre-test. For composition aspect the low achievement group mean was 7.00 (9.14 for the moderate group). In terms of coloring skills, the low group had a mean of 6.75, while the moderate group had 9.03. For interpretation, the low group showed a mean of 4.08, and moderate group 5.28. For creativity, the low group had a mean of 4.13, while the moderate group recorded a mean of 5.14. Before the treatment given, both groups showed significant differences in achievement. The moderate group showed higher achievement than the low achievers group.

Post-test Descriptive Statistics for Digital Painting
Table 3 gives the post-test results of the sample for digital painting.The descriptive statistics of post test digital painting (Table 3) shows a small difference for four aspects of the mean value. In terms of composition the low achievers group had a mean of 9.00 while the moderate group had a mean score of 10:00.

Table 3 : *Descriptive Statistics for Post Test Results for Digital Painting*

	Group	Mean	Std. Deviation	N
	low	9.00	2.187	24
Composition	Moderate	10.00	1.871	29
	Total	9.55	2.062	53
	low	9.08	2.358	24
Color	Moderate	10.24	2.081	29
	Total	9.72	2.265	53
	low	5.58	1.442	24
Interpretation	Moderate	6.14	1.356	29
	Total	5.89	1.410	53
	low	5.62	1.469	24
Creativitiy	Moderate	6.00	1.254	29
	Total	5.83	1.355	53

In terms of coloring skills, the low achiever group had a mean of 9.08, while the moderate group recorded 10,24. For interpretation, the low group showed the mean of 5.58, while the moderate group got 6.14. For creativity, the low group had a mean of 5.62 and the moderate group recorded the mean of 6:00.
These results show that, after the treatment given, the moderate group recorded higher achievement than the low achievers group.

Table 4 : *The Comparison between Digital Painting in Pre-test and Post-test Scores*

Variables	Group	Mean Pre Test	Mean Post Test	N
	low	7.00	9.00	24
Composition	Moderate	9.14	10.00	29
	Total	8.17	9.55	53
	low	6.75	9.08	24
Color	Moderate	9.03	10.24	29
	Total	8.00	9.72	53
	low	4.08	5.58	24
Interpretation	Moderate	5.28	6.14	29
	Total	4.74	5.89	53
	low	4.13	5.62	24
Creativity	Moderate	5.14	6.00	29
	Total	4.68	5.83	53

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The descriptive statistics of Table 4 show the mean differences between pre-test and post test within the group. The mean is higher in the post test for each value of the composition, color, interpretation and creativity. Both group shows an increasing mean during the post test. Overall, it showed a significant difference. Although in both pre-test and post-test, moderate group showed higher score, but the low achievers group score increased during the post-test. This indicates treatment in digital painting helps and improves the painting skills in all four aspects of composition, color, interpretation and creativity.

Research question 2 - Are there any development in student conventional painting in four aspects of composition, color processing, interpretation and creativity between the low and moderate category students after the treatment?

Table 5 shows the descriptive statistics of the different pre-test mean value for the composition, color, interpretation and creativity between low and moderate groups.

Table 5 : *Pre-test Descriptive Statistics for Conventional Painting*

	Group	Mean	Std. Deviation	N
Composition	low	5.63	1.245	24
	Moderate	9.17	2.054	29
Color	low	5.38	1.279	24
	Moderate	9.38	1.990	29
Interpretation	low	3.50	1.285	24
	Moderate	6.34	1.396	29
Creativity	low	3.54	1.062	24
	Moderate	6.10	1.372	29

With reference to Table 5, the low achievers group scored a mean of 5.63 in composition, while the moderate group scores 9.17. In terms of coloring, the low group had mean score 5:38, while the moderate group scored 9:38. For the interpretation, the low group gets mean was 3:50 and 6:34 for the moderate group. And for creativity aspect, low group obtained a mean of 3:54, while the moderate group recorded a mean of 6.10. Overall, it showed a significant difference between these two groups.

Table 6 : *Post-test Descriptive Statistics for Conventional Painting*

	Group	Mean	Std. Deviation	N
Composition	low	8.04	2.177	24
	Moderate	9.31	2.002	29
Color	low	7.96	2.312	24
	Moderate	9.48	2.011	29
Interpretation	low	4.92	1.213	24
	Moderate	5.41	.907	29
Creativity	low	5.04	1.268	24
	Moderate	5.48	.986	29

The descriptive statistical tables for the post test scores in conventional painting (Table 6) show a slight difference for the mean value of the four aspects. In terms of composition, the low achievement group gained mean 8.04 and moderate group had a mean of 9.31. In terms of coloring skills, low group had a mean of 7.96, while the moderate group scored 9.48. For interpretation, the low group showed a mean of 4.92, and moderate group 5.41. In creativity aspect, the low group obtained a mean of 5.04, and the moderate group recorded 5.48.

Table 7 : *The Pre-Test and Post-Test of Conventional Painting*

	Group	Mean Pre Test	Mean Post Test	N
Composition	low	5.63	8.04	24
	Moderate	9.17	9.31	29
Color	low	5.38	7.96	24
	Moderate	9.38	9.48	29
Interpretation	low	3.50	4.92	24
	Moderate	6.34	5.41	29
Creativity	low	3.54	5.04	24
	Moderate	6.10	5.48	29

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The descriptive statistics of Table 7 shows the mean differences in conventional painting between pre-test and post-testfor both of low and moderate group achievers. The mean is higher in the post test for both groups. There is a slightly decrease for interpretation and creativity for the moderate achievers. Interpretation mean decreased from 6.34 to 5.41 while for creativity it decreased from 6.10 to 5.48. Overall, both group performances show an increasing mean during the post-testcompared to pre-test.

Table 8 : *Overall Pre-test and Post-test for Digital and Conventional Painting*

Variables	Digital Painting		Conventional Painting		
	Mean Pre Test	Mean Post Test	Mean Pre Test	Mean Post Test	N
Composition	8.17	9.55	7.57	8.74	53
Color	8.00	9.72	7.57	8.79	53
Interpretation	4.74	5.89	5.06	5.19	53
Creativity	4.68	5.83	4.94	5.28	53

Table 8 shows that there was an increasing mean in post-test for both of digital and conventional painting over all of the variables.

Manova repeated measurements used to spot the differences between pre and post test. This analysis below was to assess the effectiveness of digital tools in bringing changes in the production of digital painting which cover the area of composition, color, interpretation and creativity among students. The results of Multivariate Pillai's Trace in Table 9 shows there is a significant major effect of the digital paintings independent variables [F (4, 49) = 14.77, p <.05]. This proves that there are significant differences in all independent variables of the pre-test and post-test.

Table 9 : *Multivariate test of Digital Painting in Pre and Post-Test (N = 53)*

Effect			Value	F	Hypothesis df	Error df	Sig.
Between Subjects	Intercept	Pillai's Trace	.965	333.842b	4.000	49.000	.000
		Wilks' Lambda	.035	333.842b	4.000	49.000	.000
		Hotelling's Trace	27.252	333.842b	4.000	49.000	.000
		Roy's Largest Root	27.252	333.842b	4.000	49.000	.000
Within Subjects	prapasca	Pillai's Trace	.547	14.771b	4.000	49.000	.000
		Wilks' Lambda	.453	14.771b	4.000	49.000	.000
		Hotelling's Trace	1.206	14.771b	4.000	49.000	.000
		Roy's Largest Root	1.206	14.771b	4.000	49.000	.000

Manova repeated measurements analysis also used to assess whether the application and the treatment of digital tools given effective in bringing changes in the production of conventional painting. This change is detected in terms of composition, use of color, interpretation and creativity among students.
The results of Multivariate Pillai's Trace in Table 10 shows there is a significant major effect of the conventional painting independent variables [F (4, 49) = 4.95, p <.05]. This proves that there are significant differences in all of the independent variables in the pre and post-test of the conventional painting.

Table 10 : *Multivariate test of Conventional Painting in Pre and Post-Test (N = 53)*

Effect			Value	F	Hypothesis df	Error df	Sig.
Between Subjects	Intercept	Pillai's Trace	.955	261.963b	4.000	49.000	.000
		Wilks' Lambda	.045	261.963b	4.000	49.000	.000
		Hotelling's Trace	21.385	261.963b	4.000	49.000	.000
		Roy's Largest Root	21.385	261.963b	4.000	49.000	.000
Within Subjects	prapasca	Pillai's Trace	.288	4.950b	4.000	49.000	.002
		Wilks' Lambda	.712	4.950b	4.000	49.000	.002
		Hotelling's Trace	.404	4.950b	4.000	49.000	.002
		Roy's Largest Root	.404	4.950b	4.000	49.000	.002

Thus digital tools application is effective in enhancing student ability in painting from the aspects of composition, color processing, interpretation and creativity. Basically there is a significant difference between the pre-test and post-test either in the digital painting or the conventional painting.

DISCUSSION

The statistics show that the digital painting treatment gave a positive impact in improving the skills of painting in both digital painting or conventional painting. Digital painting treatment is effective in increasing the skills of composition, coloring, interpretation and creativity. This is clear based on the comparison between the mean of the pre and post-test that proves the differences in mean after treatment for both conventional and digital painting.

Digital art learning is closely related to conventional painting learning. Weakness in producing conventional painting will affect the results of the work in digital painting. Digital art is inseparable from the art fundamental elements, aesthetic value and design. Teaching and learning digital art requires both using art and science perspective. Both must be integrated to get a clear understanding of the principles of art and skill that can help generate digital art as well as understand the scientific concepts in digital technology.

Human perception also helps in manufacturing quality technical work (Wong, 2005). Digital painting requires knowledge in science, especially physics, for example to understand wavelengths and light elements as well as coloring. Learning and producing digital painting can enhance the student's knowledge in science and technology aspects (Arnston, 2006).

CONCLUSION

Digital equipment in painting is a relatively new exploration and exciting field from the practical point of view. Digital canvas is a manual attempt at using the software and becoming a digital artist. It is not a genre that denies conventional art. Digital Canvas is systematic artwork exploration using the pixel and vector painting in forming a line, color as well as modifying and manipulating form (Raimes, 2006).

It is simple, attractive and practical, easy to reach and sophisticated creative medium and arbitrarily manipulated through inspiration and imagination. This does not mean conventional painting is replaced by digital art but rather something contemporary will be created featuring the latest designs. Indeed, with time, work and artistic expression are constantly developing (Wands, 2001).

Digital painting production enables the students in interdisciplinary nature such as technical training and digital art. Being an artist and knowing how to use graphics package itself is not enough. A computer science background is a necessity (Davis & Gibbs, 2006).Instructional technology applications in producing digital paintings in secondary schools are expected to be an alternative or variation to the conventional or traditional painting.

Applying contemporary technologies to fulfill the needs and requirements and using digital equipment is essential. Developed countries like Japan put arts education based on production. The emerging technologies turned out to fix the country's future art education. According to Motomura (2003), the expression of image media has entered the school curriculum in Japan. Therefore digital art exposure at Malaysian secondary school level could provide our students with an early start and opportunities for them to explore their future career in digital art

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