

Visual, Creative, Innovation and Aesthetic Thinking in the Digital Animation Course for Children

Fong Lay Man & Siti Fatimah Mohd Yassin

Faculty of Education, Universiti Kebangsaan Malaysia

Corresponding email: fonglm3@gmail.com.

Abstract. The rapid development of the computer technology in this 21st century has enhanced the use of digital media in the education. The purpose of this research was to design and implement a digital animation course for children aged between six to 12-year-old. This training employed the Blended Learning (B-Learning) strategy using social media and face-to-face classroom as learning environment in a digital era. The course also inculcated the process of visual, creative, innovative and aesthetical thinking (VCIAT) when children learned to develop animated objects. The training was developed and implemented using a collaborative action research (CAR) for methodological approach and ASSURE model for instructional design. Eight kids involved in the first cycle of CAR, while 11 students were in the second cycle. This study successfully implemented the process of cultivation of VCIAT through B-Learning and produced the Kid Animator II as a virtual learning environment. However, further research on the role of parents in supporting the process of VCIAT using social media and the improvement of the training are needed.

Keywords: Blended Learning, Visual Thinking, Creative and Innovative thinking,

INTRODUCTION

Kids nowadays expose to the rapid development of computer technology such smartphone and computer tablet. They are also like to watch 2D and 3D cartoon animation on a television channel and Youtube. However, the kids do not realize the advantages of using digital media for learning purposes, except playing entertainment video games. Therefore, the parent should develop their children's talent in digital animation creation at the early stage. Besides playing the game, a parent can encourage them to use graphic tools installed in the gadget or computer to create digital graphics as an alternative to paper-pencil drawing. Some parent especially those who live in urban area, send their kids to learn about digital art at the center that offers computer graphic course. Hence, there is a need for the children to learn how to be creative through digital visual arts especially in digital animation creation.

The first author is a part-time digital art instructor for the children. Based on the experiences and knowledge from literature, he has conducted an action research collaboratively with the second author to examine on how to teach children learning about digital animation. It is also to improve his professional practice in teaching and learning. The primary purpose of this study was to design and implement a digital

animation course for children aged between six to 12-year-old. This training employed the B-Learning strategy using social media and face-to-face classroom as a learning environment. The course also inculcated the process of visual, creative, innovative and aesthetical thinking (VCIAT) when children learned to develop animated objects.

REVIEW OF LITERATURE

This section briefly describes the conceptual framework of the study. The instructor combined the concepts when designing and implementing the course. The concepts were related to each other.

Visual Thinking

Visual thinking (VT) is an essential in creating digital art objects. According to Ware (2008), in VT, part of the brain controls emotions and creativity to manage information in an intuitive and simultaneous way. Vattam, Helms and Goel (2010) state that visual collection consists of the concept and method like visualizing information, mind maps and visual performances that learned from films and comics. VT is a process using the mind to find the meaning and understanding of something, discovering idea or creation possibilities and make considerations for making reasonable decisions and solving problems and making metacognitions towards the old process (Goel, Vattam, Wiltgen, & Helms, 2011). Also, visualizations is an integral part of the scientific thinking that helps to students to learn about science (Ainsworth, Prain, & Tytler, 2011). Hence, in this study, the instructor explored the process on how to embed VT implicitly when teaching the children to create digital animation objects.

Creative and Innovative Thinking

Creative thinking (CT) and innovative thinking (IT) are important parts of the VT process. CT is the process of creating and imagining new ideas (Stein, 1974). While IT is the implementation of the creative ideas effectively by adding value (Horth & Vehar, 2015). Brennan and Resnick (2013) have done research on young children use their imagination by creating the interactive media using Scratch programming. Dalrymple (2015) conducted an action research study on how to develop innovative thinking skills among primary school pupils. Therefore, in this study, it focused on the process of how to develop the children's creative and innovative thinking skills by imagining and creating digital art objects and scripts of storytelling as preparation for the children to learn about developing interactive media in the future.

Aesthetic Thinking

Visual art needs esthetic value. Holt (2001) suggested that the aesthetic thinking (AT) can be used as a guide to understanding humans characteristically experience the arts. Arts is about producing shapes which generate aesthetic joyfulness, enjoyment, and pleasure (Tataroglu, 2015). Aesthetic pleasure means happiness and joyfulness for the party who receives the message. Tataroglu also stated that aesthetical is related to the sensory perception towards something or atmosphere which emphasizes the aspect of art and beauty, not the point of usability. In this research, the instructor examined the

process of nurturing the element of aesthetic value and thinking when the kids learn to create digital art objects such as graphic and animation.

The Development of Animation Object

The animation is visualizations of external ideas which crossover time dimensions and particular directions in certain movements (Rieber, 1990). According to Sajjad, Mohsin, Riaz, and Abdullah (2012), the character development is an essential element in animation. Before starting to do any animation, it is important to choose a suitable character to develop the animation. They also stated that the developed spirit should present particular reaction or emotion such as happy, sad, shocked, calm, etc. The drawn or developed character should be in all perspective and view. When developing the character, it is easy to build a background in animation. According to Sajjad et al. animation is an illusion of movement. Professional animators use exaggeration techniques and beautify the proposal to produce more interesting stories. Before starting the production of an animation, it is important to know how animation is made with what sort of software's and techniques. Animation has its procedure sets such as key frames, motion tweeting, reducing, action and reactions, timing, masquerade, expectations, and mechanics. Hence, the children need to learn how to be creative through digital visual arts especially in creating their animation. Therefore, in this study, the instructor investigated the process of teaching and learning when the students learned the process of developing digital animation object.

METHOD

The research question that guided the inquiry was 'How the digital animation course for the children that inculcate the VCIAT skills can be designed and implemented?' For answering this question, the study employed a collaborative action research (CAR) approach. Cunningham (2011) defines CAR as a learner-centered approach to staff development. It is a recursive approach to improving professional practice involves establishing the focus to study; generating questions for inquiry process; collecting and analyzing data; reflecting and adjusting the course. Before this research, the researcher had done a need analysis study using surveying and interviewing techniques to gain information as an input to designing the course. Three graphics instructors involved for interviewing and 30 students for survey using questionnaires.

The researchers also utilized the ASSURE model of instructional system design which developed by Heinich, Molenda, Russell, and Smaldino (2001). It consists of six phases: analysis of learners; statement of objectives; selection of method, media and materials; utilization of method, media and materials; require students' performance and evaluation. Eight kids involved in the first cycle of CAR, while 11 students were in the second reporting period. 11 students in the age group of 6 to 12 years-old participated in the digital animation training. During the implementation process, the instructor as active participant in this CAR collected and analyzed the data from observation, informal interviewing, self-reflection and the digital animation object created by the students.

RESULTS

The action research emphasizes on examining and understanding how the process being implemented rather than the output. The description of the following findings are based on the process in the ASSURE model of instructional design.

A- Analysis of Learners

The students who were attending the ordinary art class come from multi-racial and social economy status. Parent paid the fees depending on the level of students' skills: basic, intermediate and advanced graphic classes. Each class contained five students (depending on the skills and enrolment). The students attended the class during the weekend. Due to multi-racial students, the instructor used three languages: English, Malay, and Chinese. The student did not learn digital animation software in the regular class. Therefore, the instructor gave the students a pre-test to measure their knowledge and skills in digital art (graphics and animation). The results of the test were used to understand student level of knowledge and skills and to divide them in a small group within the class.

S - Statement of Objectives

The aim of the course was to train the students in creating digital animation objects at a basic level. Besides learning about the use digital software in the art class, the course embedded thinking skills when creating animation objects. By the end of the course, the student should be able to create a simple animated object.

S - Selection of Methods, Media and Material

In order to achieve all the objectives stated in the previous phase, at this stage, the researchers selected the visual, creativity, innovation and aesthetics thinking skills to be infused implicitly while the students were creating animation objects projects. The instructor integrated these strategies in the course content and delivery.

The learning about the animated software was only part of the art class. The instructor introduced the use of animation maker software to students. Based on the need analysis study, the teachers from the college suggested using a suitable software for the children age six to 12 years-old. Therefore, after reviewing several open source animation maker software, the instructor chose the 2D Pencil Animation open source software. It was simple software and suitable for the basic class especially for the children to learn digital art and animation.

The instructor facilitated the face to face with a small number of students for each class. However, due to the introduction of animation software as an additional content of the art course and the time was limited, some of the content materials such as a guideline on the development of animation object needs to be uploaded to the website. The students can revise the material at home. The researcher selected the social media – Facebook

(FB) as a platform because of its simplicity and reliable. The students used their account or parent account to join FB page name Kid Animator created by the instructor. The course materials were uploaded in the form of infographics in the photo section.

This course also applied a project-based learning strategy where the students created the animation as a project. This project assessed the process (formative) and the product (summative). At the end of the course, the instructors saved the students' animation objects to the Kid Animator page.

Other technologies used in the course were the Google Doc, Whatsapp, and Youtube. The students took a pre-test to assess their prior knowledge and skills in creating animation. This information was used to understand students level in the class. The instructor and students used the Whatsapp Group for interaction and discussion after the class while waiting for the next class. Wheres, Youtube was used to observe the making of animation using pencil animation software.

U - Utilization of Method, Media and Material

After selection phase, the instructor prepared and reviewed the materials, technology, strategies and environment as well as the assessment before implementing the digital animation course. At this stage, it involved two cycles of action research where the implementation of the training began and refined. The instructor performed the teaching as planned before. The instructor explored and examined the process of utilization of the selected strategies (thinking skills and project-based learning) and the use of Kid Animator (as shown in Figure 1) as support learning environment to the face to face instruction and facilitation when the students learned the pencil animation software by doing the project.



FIGURE 1. The Kids Animator Page

The instructor told the students the objective of the course and gave the motivation why they needed to learn drawing graphic and creating animation. The instructor also explained how the training used the blended learning strategies. Later, the instructor asked the students to take the online pre-test that prepared in an open document in Google Doc (as shown in Figure 2). The result of the pre-test was useful to know the

background of the student.

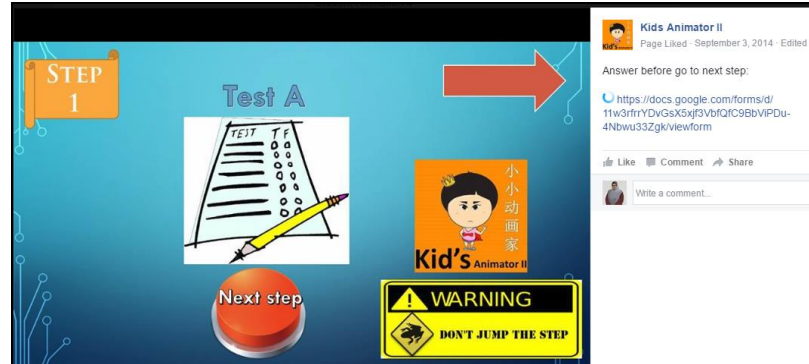


FIGURE 2. Pre Test

During the face to face class, the instructor briefly explained the process of developing animation object. The students can revise the guideline on how to create animation in the Kid Animator (as shown in Figure 3) at any time. However, several parents did not allow the students to user social media because they were too young.

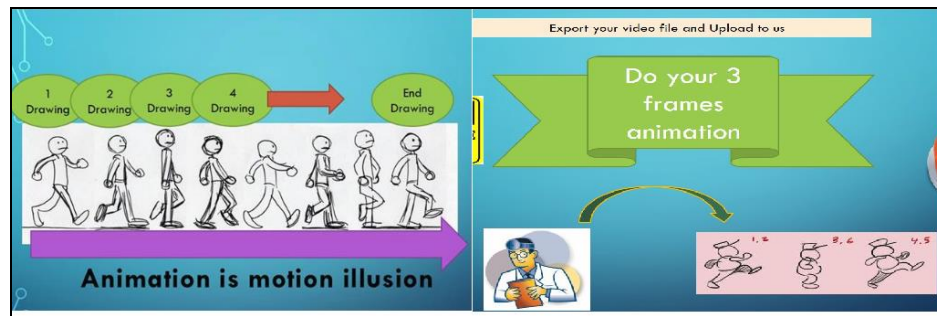


FIGURE 3. The steps to draw graphics before animation

R – Require Learner participation

This stage belonged to the earlier stages. The instructor not only taught the course, but also facilitated and observed the students participation at the class level as well as individual level. The students were actively learning using all technologies. The students did not realize that the VCIAT thinking skills instilled to them when creating animation. Figure 4 is one of the example students' projects drawing graphics in the frames before creating animation using pencil animation software.

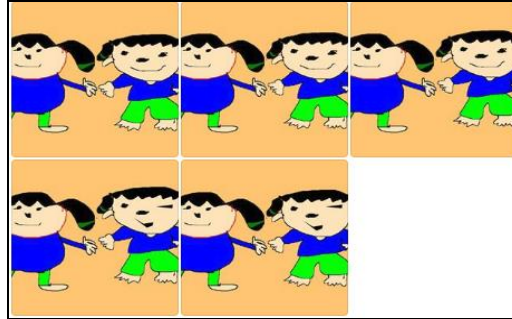


FIGURE 4. Example Different Graphics showing the movement

E – Evaluation and Revise

This study successfully implemented the process of cultivation of VCIAT through B-Learning and produced the Kid Animator I in the first cycle and Kid Animator II in the second cycle of CAR. However, based on the reflection of the researchers and summative assessment of final animation objects, the nurturing of aesthetic thinking needed further attention and improvement in the future course. Figure 5 illustrates the process of nurturing VCIAT in the digital animation course.

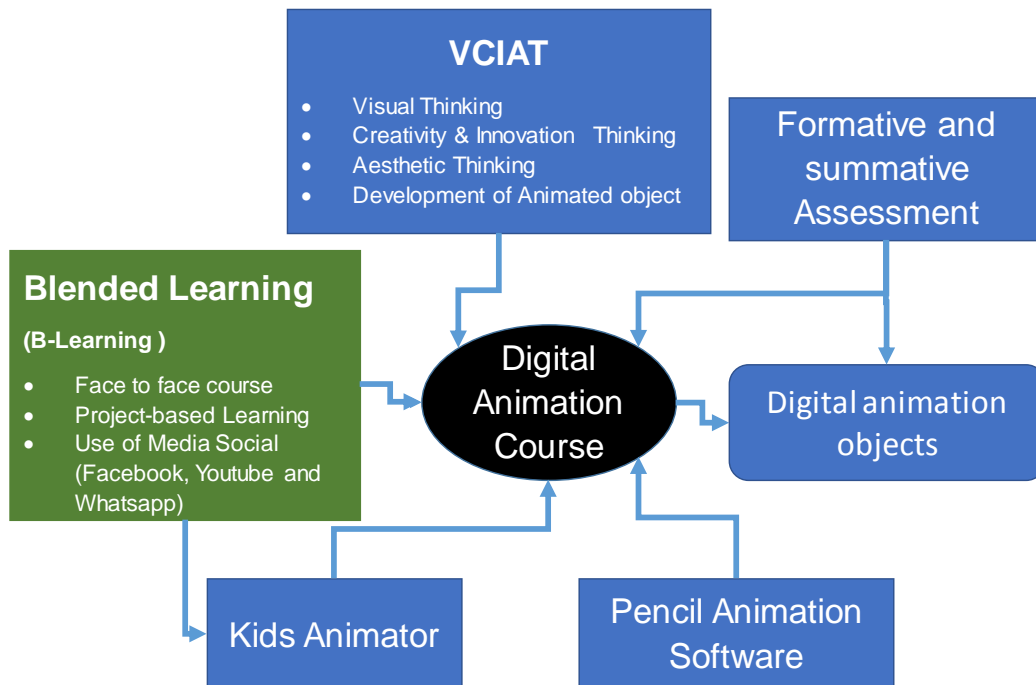


FIGURE 5. The process of nurturing VCIAT in the digital animation course for children

DISCUSSION

The limitation of the study was the time, and as a new part-time instructor, it was bounded by the rule of the college. Besides the successful implementation of the course where the students abled to create digital animation objects, there was also some improvement to be considered. The combination of VCIAT was a good starter. However, the instructor had faced difficulty to implement the strategies. The instructor needs more

cycles to improve the professional practice for the inculcation of VCIAT. The application of visual and aesthetic thinking in education are still new. In previous research, it focused on limited skills and investigated separately such as research by Dalrymple (2015). The research also concentrated on using the tool in computer animation (Musa, Ziatdinov, & Griffiths, 2013). Also, the implementation of VCIAT will be more successful if the parents understand the skills and support the process at home especially for the young kids.

The blended learning strategy was also successful when the parents have allowed and assisted their children in using social media. However, many of them felt uneasy to use FB and Youtube due to children are still kids (aged six to 12 years-old). This uneasiness is related to the cybersecurity and health issues. Moorhead, Hazlett, Harrison, Carroll, Irwin, and Hoving (2013) state that social media is a powerful tool for collaboration and social interaction, but still needs monitoring.

For the assessment component, the rubrics for VCIAT skills instilled in the course should be refined. Johnson (2015) had study the preservice teacher used the instructional rubric in teaching visual literacies, and they were able to identify their limitations with image selection, content knowledge, leading discussions and anticipating their pupils' misconceptions about content. Therefore, the use of instructional rubric will help the instructor instill VCIAT skills in creating meaningful digital graphics and animation. Student and parents can use the instructional rubric the formative assessment. Later, the instructor, students and parents will be able to discuss the strengths, weaknesses and what aspects need for improvement.

CONCLUSION

This research was successfully carried out in two cycles of CAR. The ASSURE model helped a lot in the process of designing and implementing a digital animation course for children. This training used the B-Learning strategy using social media and face-to-face classroom to inculcate the process of VCIAT skills when kids developed animated objects as a project. However, further research should examine the role of parents in supporting the process of VCIAT using social media. The constructs and items in the instructional rubric should also be revised and refined.

REFERENCES

1. Ainsworth, S., Prain, V. & Tytler, R. (2011). *Drawing to learn in science*. Science (333, 6042), 1096-1097
2. Brennan, K, & Resnick, M. (2013). Imagining, creating, playing, sharing, reflecting: How online community supports young people as designers of interactive media. In C. Mouza and N. Lavigne (eds.) *Emerging Technologies for the Classroom: A Learning Sciences Perspective* (pp 253-268). New York, NY: Springer.
3. Cunningham, D. (2011). *Improving teaching with collaborative action research: an ASCD action tool*. Alexandria, Va: ASCD.
4. Dalrymple, K. (2015). *An action research study aimed at designing and implementing an innovative unit of instruction within the context of developing innovative thinking*

- skills among primary school students*. Master of Education Research Project. The University of the West Indies
5. Heinich, R., Molenda, M., Russell, J. D. & Smaldino, S. E. (2001). *Instructional media and technologies for learning*, 7th Ed. Columbus: Merrill/Prentice Hall.
 6. Holt, D.K. (2001). *The search for aesthetic meaning in the visual arts: the need for the aesthetic tradition in contemporary Art Theory and Education*. Connecticut: Bergin & Carvey – Greenwood Publishing group
 7. Horth, D. M., & Vehar, J. (2015). *Innovation: How leadership makes the difference*. (White Paper), Greensboro, NC: Center for Creative Leadership
 8. Johnson, C. M. (2015). *Social Studies Discussions to Foster Visuals Literacies in Elementary Social Studies Methods Courses*. Oregon Journal of the Social Studies. 3(2). 11-23
 9. Moorhead, S. A, Hazlett, D. E., Harrison, L., Carroll, J.K., Irwin, A, & Hoving, C. (2013). *A new dimension of health care: systematic review of the uses, benefits, and limitations of social media for health communication*. Journal of Medical Internet Research 2013;15(4):e85 DOI: 10.2196/jmir.1933
 10. Musa, S., Ziatdinov, R., Griffiths, C. (2013). Introduction to computer animation and its possible educational applications. In M. Gallová, J. Gunčaga, Z. Chanasová, M.M. Chovancová (Eds.), *New Challenges in Education. Retrospection of history of education to the future in the interdisciplinary dialogue among didactics of various school subjects* (1st ed., pp. 177-205). Ružomberok, Slovakia: VERBUM – vydavateľstvo Katolíckej univerzity v Ružomberku.
 11. Rieber, L.P. (1990). *Using computer animated learning and continuing motivation*, Journal of Educational Psychology, 82(1), 135-140
 12. Sadaf Sajjad, Sajjad Mohsin, Sahar Riaz, & Abdul Hanan Abdullah (2012) *Digitizing 2D sketched animated character for Graphical Imagery Therapy (GIT) game*. International Journal of Information and Education Technology, Vol. 2, No. 4.
 13. Stein, M. I. (1974). *Stimulating Creativity Volume 1: Individual Procedures*. New York: Academic Press.
 14. Tataroglu, E. (2015) *Effects of Art/Design Education on Meta-Esthetics Consciousness of Fine Arts Students*. Educational Research and Reviews, v10 n7 p912-932
 15. Vattam, S, Helms, M. & Goel, A. (2010). *A content account of creative analogies in biologically inspired design. AI for engineering design, analysis and manufacturing*, Special Issue on Biologically Inspired Design, 24: 467-481.
 16. Ware, C. (2008). *Visual thinking for design*. Burlington, Mass: Morgan Kaufmann Publisher.