A STUDENT'S PERSPECTIVE OF SCAMPER TECHNIQUE USED FOR MULTIMEDIA ASSET CREATION

Kok Yew Ang [1]
Universiti Tunku Abdul Rahman
[1] angky@utar.edu.my
May Chan Yuen
Universiti Tunku Abdul Rahman
[2] yuenmc@utar.edu.my

ABSTRACT

The purpose of this paper was to investigate the effectiveness of SCAMPER technique based on students' perspective. SCAMPER is an abbreviation of a seven-step idea generation technique which consists of Substitute, Combine, Adapt, Magnify, Modify, Put to another use, Eliminate and Rearrange. Creating a multimedia asset can be a challenge especially when the students are required to produce in a short time of period given. Hence this idea generation technique is introduced to the students to enhance their creativity and speed in their asset creation. This study used a qualitative approach to better understand the difficulties students faced and the effectiveness of SCAMPER technique in creating assets for design and multimedia production. The multimedia assets that the students created is not limited only to video, audio, graphic design, text or 3D models but could be a combination of any of the mentioned medium (Wang, et al, 2012). Through focus group interview, Year 2 students divulged their concerns and experience regarding idea generation and also their thoughts about the SCAMPER technique. Each session lasted between 20-30 minutes. The results of the study showed that using the SCAMPER technique sped up the process in generating ideas for the tasks given to the students. The students claimed that the technique gave them a clearer design path as compared to the mind map technique. The students also relayed that they would continue to apply the SCAMPER technique in their future work. This study disclosed the difficulties design students faced in creating the multimedia assets for multimedia and design productions. Besides that, this study attempted to understand better on the SCAMPER technique based on students' perspective, extending from the authors' previous study. These findings provided insights for the lecturers on the difficulties that the students faced during ideation stage and allowed them to strategize to facilitate more effective multimedia asset creation.

Key Words

SCAMPER Technique, Multimedia Asset, Idea Generation Technique

INTRODUCTION

This study was an extension of the previous study published by the authors titled Idea Generation Techniques for Character Design: A Study of UTAR Design Student (Yuen & Ang, 2014). The paper identified the SCAMPER technique as a more direct method added onto the students' existing brainstorming techniques such as mind maps and juxtaposition. This study further investigate the effectiveness of the SCAMPER technique based on students' perception. In the context of this study, the mind mapping technique is the students' primary technique used during their ideation process while SCAMPER technique was commonly used as an alternative. Mind mapping pioneered by Tony Buzan (2002), generate ideas by listing and linking information while branching out from a main keyword. SCAMPER on the other hand focused on a seven-step design process, in the idea generating process. Through the seven-step process of substituting, combining, adapting, magnifying, putting other to use, eliminating and also rearrange or reversing their asset, students could generate a wide range of ideas based on any combination of the steps. As design students, the most common challenge faced during design process is to come out with fresh and original ideas. Mind mapping is useful in helping the students to generate ideas but when applied in design context, it does not

impact the students visually. The SCAMPER method whereas is intuitive as classified by Shah, et al. (2003), and is argued to be an intermediate method because it enables both idea generation and problem analysis. Therefore, this study attempts to provide an alternative idea generation technique to the students in order to enhance the asset creation process. Creating a new asset is a challenge especially to new designers, as it needs to go through precise design process and it is time consuming. A student goes through precedence studies prior to idea generation and proposal. Hence, an idea generation technique is crucial for the student to understand their workflow before executing it and finally output as a final asset.

LITERATURE REVIEWS

In creating multimedia assets, the students apply idea generation techniques during their design process to enhance creativity. There are a variety of ideation tools exist to assist designers in their ideation process and not limited to mind maps or juxtaposition (Fogler and Le Blanc, 1995). SCAMPER is also just one of the many tools for idea creation. SCAMPER techniques were developed originally by Osborn in 1953 and extended by Eberle in 1971 whom brainstorm recommendations and convolve them into an extended idea generation technique to push creativity. Different students will face different kind of difficulties in their design process. However, this should not be the factor deterring students from progressing as Majid, Tan and Soh(2003) explained:

> *Although creativity tends to differ from one individual to another, no individual can be considered to lack creativity; what matters the most, in this context, is finding a way to elicit and develop this characteristic, which more or less exists in all individuals. (Harman, 2015)*

Adams (1999) described the barrier to creativity works to a wall of mental that block the problem solver from conceiving its solution or perceive a problem correctly. Nordin and Malik (2015) indicated that geographical factors whether the students live in urban, semi urban or rural area, does not have any effect on barriers to creative thought and innovative skills. Creativity according to Wong and Pang (2003), are however affected by various attributes which include the individual's situation, motivation, cognitive development and personality.

Table 1: McKenney and Reeves's (2015) Main Processes of Design and Construction (pg.133)

Phase	Solutions	Step
Design	Exploring Solutions	Generating Ideas
		Considering Ideas
		Checking Ideas
	Mapping Solutions	Requirements and Propositions
		Skeleton Design
		Detailed Specifications
Construction	Building Solutions	Creating Initial Prototypes
	Revising Solutions	Revising Prototypes

According to McKenney and Reeves (2015), "Exploring and mapping potential solutions can yield documents that describe potential designs to be created. These can range from broader descriptions of the skeleton design to more detailed design specifications" (pg.131). SCAMPER technique for the idea generation will be in the design phase where the students explore solutions in generating, considering and checking ideas. In Choi and Kim's (2014) study, the SCAMPER technique were effectively applied to create fashion designs using a combination of 3 or less of the SCAMPER techniques. Ozyaprak, (2016) also reviewed SCAMPER as a divergent thinking process and a fun

technique that "provides an enjoyable environment for thinking creatively" (pg.33). The senior secondary school students who participated in a creative thinking workshop also found increase in creativity knowledge and confidence through the use of the SCAMPER technique (Poon's et al., 2014). According to Kwon and Song (2013), SCAMPER technique too benefits the students in improving their creative expression in computer graphic classes for professional, undergraduate or vocational high school.

PROBLEM STATEMENTS

As observed by the researcher, the students usually faced difficulty in executing a design asset which in the class is a character modelling. While the class requires them to come out with a new multimedia asset the students brainstorm and sketch out on paper for their brief before consulting with the class lecturer. This process usually takes up a long time and sometimes the design output is still not of the quality that the students and lecturers expected. The students mentioned that even though they progressed with their precedent studies using the internet, they somehow still faced difficulties in producing fresh and new ideas. Hence, SCAMPER is introduced to the students to help them in the asset creation process aside of the mind mapping technique.

METHODOLOGY

This study used a qualitative approach to investigate students' perceived challenges in multimedia and design asset creation. The focus group interview method was used as it enabled the researchers to gain understanding and gather as much information from a few students within a short period of time. All of the focus group interview session lasted between 20-30 minutes for each sessions. The venue of the interview was held in the computer lab of the Universiti Tunku Abdul Rahman at the 7th floor. The reason the computer lab was choosen is to make sure that the students have a familiar enviroment that they are comfortable with.They were asked 4 questions which related to SCAMPER technique, before and after application in their design process. At the end of the interview, the researcher tested the students to draw on paper a character using SCAMPER technique.

The questions asked during the interview were semi-structured as below:
1. What are the difficulties that you faced when working on design-based assignments? and do you know what the SCAMPER technique is?
2. Have you apply the SCAMPER technique in your design process flow before this? If no, why?
3. How do you feel/think if your lecturer implements SCAMPER technique as a part of ideation progress in your work?
4. To what extent do you think the SCAMPER technique helps you in the design process and would you use SCAMPER technique in the future?

The interviews were recorded using a digital audio recorder so that the researcher can analyse the data captured verbatim. The data was then being analyse thematically using NVivo to understand on the effectiveness of applying SCAMPER technique in their design process. Empathetic listening approach was applied in the interview so that the students feel more comfortable in sharing their thoughts and difficulty in their design process. As Salem (2011) stated that empathetic listening is a way of listening and responding to another person that can improve mutual understanding to gain trust. A total of 4 focus group interviews were conducted with 3 students for the first three sessions and 4 students for the last session. The data collection was conducted in 2 weeks' time for using purposive sampling. The students were firstly briefed on the aim and objectives of the study and consent forms were then disseminated to them. Only after consent was obtained, the researcher progressed with the interview sessions. The participants of this study consist of students from second year students majoring in Digital Animation, Game Design and Game Development in the Faculty of Creative Industries.

Table 2: Survey Demographics (n=13)

Course	Male	Female
Digital Animation	4	2
Game Design	3	1
Game Development	2	1

RESULTS & DISCUSSION

During the focus group interviews, the students divulged the difficulties they faced during the pre-design stage and how SCAMPER technique helped to clear out their workflow. The findings are presented as follows.

Difficulties faced

Based on the data collected, the students shared a common thought that when they were firstly assigned a task, they were unsure on how to start with it. One of the student explained that 'It's like a creativity block, even though I can Google it, but sometimes I'm still unsure with what to do". The students were most likely having a creativity block when they were given the task even though there was already a brief given to them. This might be due to lack of brainstorming practice in the design process and the students were either too dependent on the internet or their lecturers for ideas. During the focus group interviews, mind mapping techniques were discussed as a brainstorming technique. The findings from the interviews however showed that the technique was "not helping that much", claimed one of the students. Another student even complained that the mind map technique is a bit "childish" for use in his study. From the data analysis, it was found that the mind mapping technique enabled the students to branch out their ideas but it did not help them visualize what they wanted to create. When the researcher asked the students whether they had heard of the SCAMPER technique, all of the students answered and replied yes they had heard of SCAMPER technique before this. When asked by the researcher did they understand the 7 steps of the SCAMPER technique, all of them are able to answer correctly. The researchers felt that it was normal for the students to start off with some 'creativity block', as the students will need some time to fully understand the requirements of the task given before actions can be taken. By practicing an effective idea generation technique nonetheless could cut off a significant of time spent to start off with their design study.

Applying SCAMPER technique

All of the students shared that they had been applying the SCAMPER technique in their brainstorming process before. Even though there were two students who doubted the process they applied before was considered as the SCAMPER technique. The researcher then confirmed with the students on the 7 steps they used to create multimedia and design assets. Students from the Games majoring created game assets while the students from Digital animation majoring created animation assets. SCAMPER requires the students to mix and match the 7 steps for them to produce creative ideas hence giving the students a wide combination of possibilities to brainstorm on their asset creation.

Mind map vs SCAMPER

When the students were asked on their views if their lecturers were to implement the SCAMPER technique as part of their ideation progress, the results seems promising. One of the students answered that "I would definitely agree that if my lecturer is going to implement this technique in our design class". Another student shared that if the technique is practiced correctly, it will really save them from lots of problems and also cut down on the time they spend on the design process,

saying "I would prefer to use this technique compared to mind mapping..." as another student added that SCAMPER "...helps me to clarify better on my design as such my game asset compared to mind map technique". SCAMPER technique would benefit the design students because it enabled them to visualize the assets they were creating for their given tasks. Another student shared that "I would prefer to use SCAMPER rather than Mind map because I can draw and see the graphics that I wanted and not wasting time branching out my ideas".

SCAMPER in future work

The majority of the students agreed that SCAMPER technique would be able to help them in their future work. Two of them were doubtful as they would not be joining the creative industry. They however agreed that they would apply the SCAMPER if their work is related to design. Data collected shows that the students concurred that SCAMPER technique enhanced their idea generation creativity and they were happy with the outcome from the technique used. One of the student shared that "I'm happy to learn this idea generation technique as I felt that I will be able to use it in my future work and I won't be spending too much time just doing research". Another student shared in his interview that SCAMPER technique give him a more solid idea as the steps are giving him a sense of guidance of what he should do to create a new design.

Student's Design Using SCAMPER

At the end of the interview sessions, the students were instructed to sketch out a character design combining an existing animal and a fruit using the SCAMPER technique. The students then explained the technique used from SCAMPER to help them to come out with their design. Below are some of the examples of the students' work for pre SCAMPER's illustration:

Figure 1 – A mixture of watermelon and rhinoceros

Figure 2 – A snake with pineapple

Figure 3 – Student's drawing on the new character

As observed by the researcher, the pre SCAMPER illustration is more straight forward and not much of new idea has been injected into the students design. As for the post SCAMPER ,the students used about 10 minutes to finish the task given. Some of the students searched on the internet for some precedent study and before attempting design using the SCAMPER technique. The researcher did not intervened during the sketching process as to give full freedom for the students to sketch out what is in their mind at that time.

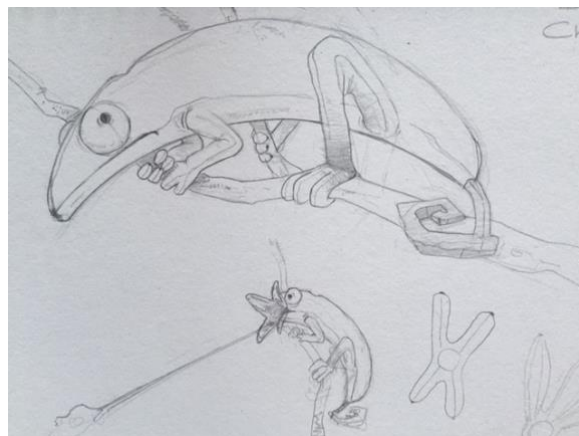Figure 4 – Student's illustration in Post SCAMPER

Figure 5 – A banana lizard character with SCAMPER applied

Figure 6 – A sloth and cherry inspired character

Figure 7 – An ostrich and strawberry inspired character

From the students drawing, even though most of the student did not apply all of the 7 process in SCAMPER, the researcher observed that creativity needs to be taken into many factors including time. The outcome of the students drawing supports that they are able to come out with an asset within a short period of given time.
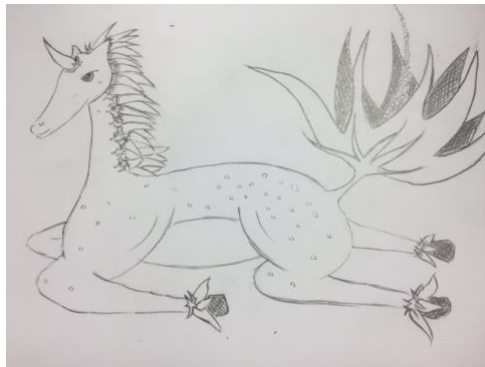

Figure 8 – A mixture of unicorn and chilli character

Figure 9 – An unique character inspired by fox and lemon

CONCLUSION

From the study, the researchers are able to understand the difficulties students faced during design process especially in their design courses. Lacks of ideation and to work in a short period of time seems to contributing to the students' difficulties. In the pre SCAMPER period, the students illustration are seems to be more straight forward with just one or two process are applied while in the post SCAMPER, the student's illustration are more complex and somehow inspired by the existing

character in the media. There are some limitations for this study where the sample for the study is small and the participants comes from a single university. A bigger number of design students and from different university is proposed for future study. Besides that, for this study the researcher is also the moderator of the interview sessions, so some of the students were reserved in their comments. The study also identified from the students' perception that the SCAMPER technique helps the students to understand better in their design subjects as compared to the mind mapping technique. To support that, some of the students claimed that by practicing SCAMPER actually given them the ease of mind in coming out with fresh and new ideas. For this study, the objective of the study has been achieved and it helps the researcher to understand the effectiveness of using SCAMPER technique from the students' perspective.

REFERENCES

Adams, J. (2001). *Conceptual Blockbusting: A guide to better ideas (4th ed.).* New York: Basik Books

Buzan, T., & Buzan, B. (2002). How to mind map. London: Thorsons

Choi, S. Y., & Kim, M. J. (2014).Creative Idea and an Analysis of Fashion Design on Korean Image through the SCAMPER Technique. *Journal of the Korean Society of Costume*, *64*(1), 1-17.

Fogler, H. S. & Le Blanc, S. (1995) Strategies for Creative Problem Solving. Prentice Hall. *Journal of Contemporary Hospitality Management, 15*(1), 29- 37

Harman, D.C.G. (2015). The Effect of the SCAMPER Technique in Raising Awareness Regarding the Collection and Utilization of Solid Waste Methodology, 6(10).

Kwon, O.H., & Song, K.S. (2013). Enhancement Idea Conception And Creative Expression in Vocational High Schools. EDULEARN13 Proceedings, 6425-6430

Majid, D.A., Tan, A.G. & Soh, K.C. (2003), "Enhancing Children's Creativity: An Exploratory Study on Using the Internet and Scamper as Creative Writing Tools", The Korean Journal of Thinking & Problem Solving, 13(2), 67-81

McKenney, S. & Reeves, T. C. (2015). Educational design and construction: Processes and technologies. In B. Gros, Kinshuk, & M. Maina (Eds.). The architecture of ubiquitous learning: Designs for emerging pedagogies (pp. 131-151). Heidelberg, Germany: Springer Verlag.

Nordin, N., & Malik, M. (2015).Undergraduates' Barriers to Creative Thought and Innovative in a New Millennial Era. *Procedia-Social and Behavioral Sciences*, *201*, 93-101.

Osborn, A. (1953). *Applied imagination: principles and procedures of creative thinking*. New York: Charles Scribner's

Ozyaprak, M. (2016). The effectiveness of SCAMPER technique on creative thinking skills. Journal for the Education of Gifted Young Scientists, 4(1), 31-40. DOI: http://dx.doi.org/10.17478/JEGYS.2016116348

Poon, J. C., Au, A. C., Tong, T. M., & Lau, S. (2014). The feasibility of enhancement of knowledge and self-confidence in creativity: A pilot study of a three-hour SCAMPER workshop on secondary students. *Thinking Skills and Creativity*, *14*, 32-40.

Salem, R. (2011) Empathetic Listening & Dispute Resolution. Community Dispute Resolution, ADR Times: Alternative Dispute Resolution Insights & Resources.

Shah, J., Smith, S., & Vargas-Hernandez, N. (2003). Metrics for measuring ideation effectiveness. *Design studies*, 24(2), 111-134.

Wang, M. H., Zheng, Z., Pan, J. H., & Liu, J. F. (2012, September). Design of Multimedia Assets Management System Based on RFID. In *Applied Mechanics and Materials* (Vol. 178, pp. 2761-2764).

Wong, C.K.S., & Pang, W. L. L. (2003).Barriers to creativity in the hotel industry perspectives of managers and supervisors. International *your brain's untapped potential* . New York: Plume.

Yuen, M. C., Azam, N. S. T., & Ang, K. Y. (2015).SCAMPER for Character Design Unique Zoo Creature. In *International Colloquium of Art and Design Education Research (i-CADER 2014)* (pp. 345-358). Springer Singapore.