Visual Communication and Dual Coding Theory: Presenting Information in Motion Graphics

A Thesis Proposal submitted to

School of Media Studies

Mapúa University

In Partial Fulfillment of the Requirements

for the course **Thesis 3 (MAS200-2L)**

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ADVISER

2020

ABSTRACT

Motion Graphics has been used as a means of communicating with the viewers and adds depths to a story by presenting information which gives it the capability to convey large quantity of information to the audience that can make use of the ability of motion graphics in incorporating different types of media such as animations, graphic designs and films. However studies show that motion graphics doesn't really lead to a much better outcome than static conditions. The purpose of this study is to come up with an output using the factors of Visual Communication and Dual Coding Theory that help provide a better understanding of excerpts from Nick Joaquin's book entitled Culture and History which further utilized the ability of motion graphics in conveying information to the audience. With the use of factors from Visual Communication and Dual Coding Theory, the feedback from the motion graphics amounted to 86.7% of positive response to the effectivity of motion graphics as a presentation tool of information. The function of Visual Communication in the motion graphics is using a person's visual senses in attracting the viewer with colors, and semiotics that resemble the images familiar to the viewer, together with the additional feature of Dual Coding Theory combination of visual imagery and audio.

Keywords: Visual Communication, Dual Coding Theory, Motion Graphics, Culture

I.   INTRODUCTION

1.1 Background of the Study

This case study talks about arguments and evidence that use motion graphic's effectivity on presenting information backed up by the use of Visual Communication and Dual Coding Theory's aspects. For the longest time, books have been used in delivering information to the general public, however printed books do not deliver much information to the brain in comparison to moving visuals because it only provides the reader an abstract information through text and drive the brain to imagine those information without certainty (Raj, 2017).

According to Merriam-Webster dictionary, the knowledge that a person gains are information acquired on a certain study, an attribute that is essential in and transferred by one of two or more other pattern that yield precise effects. It is when a message, experimental data, or a picture validates a change in the structure reflecting physical or mental experience or other construct, in a much simpler explanation, it is the correspondence or gathering of information or insight which is managed in the human brain.

Data handling begins with contribution from the sensory organs, which change physical boosts, for example, heat, sound waves, contact, or photons of light into electrochemical indicators. In both bottom-up and top-down processing, the sensory information is constantly converted by the brain. For instance, when taking a look at an image of a black box with a white background, bottom-up processing assembles extremely basic data like orientation, color, shading, and where the object's boundaries are, the place where the shading changes dramatically over a short space in order to determine that you are seeing a box in the white background rather than a box-shaped void. Top-down analysis makes use of the choices made at certain bottom-up phases to accelerate one's acknowledgement of the box. In essence, researchers have analyzed how symbols, frequently used phrases and numbers, are merged in working memory to symbolize and resolve problems such as lengthy symbolic and language-like information processing, encompassing a wide range of approaches (Macinnis & Price, 2014). Increasingly, previous researchers such as Rossiter (1982), Percy (1983), Smith, Houston and Childers (1984) stated that consideration has been designated the role of mental imaging in the processing of information. Imagery is a recognizable method of presenting information, a manner that is "very like picturing and very unlike describing" (Fodor, 1981). Recall imagery

and intellect were first examined by Aristotle who thought about the loci process and integrated his visualization based on his experience and reasoning philosophy. As explained in De anima of Yates (1966), information are obtained from perceptions that are viewed as images that are central to thought by the creative faculty. Therefore, the "thinking faculty thinks of its forms in mental pictures" and "the soul never thinks without a mental picture".

Back, et.al (2001) and Marshall (2005) stated that for years, the most basic way of passing down information about literature is through paper-published books that have transportability, versatility and sturdiness capabilities, but amid people's highly curious nature, educational and informative materials seldom make the compound, abstract mathematical and physical subjects appealing, causing absence of consideration (Jirout, Klahr, 2012). Due to the characteristics that printed books lack, new and inventive ways have been developing throughout the century. Picture books, storybooks, and films have started to come to light as a means of reaching out to the viewer and passing information in a much easier and understandable way. Additionally, utilizing electronic encouraging materials in contrast with traditional education methods of teaching shall not only provide information in the form of a text, but also allow people to concentrate on learning, and help to better understand and store information (Santoso, Siswandari, & Sawiji, 2018). This is because cognition according to Dual Coding Theory (DCT) involves the activity of verbal and nonverbal imagery (Paivio, 2006).

DCT predicted that concrete material has a processing advantage over abstract material (Paivio, 1991) as DCT capitalizes on the differentiation amongst intrinsic quality and powerful utilization of multimodal mental representations in different tasks (Sadoski & Paivio, 2013). For 2000 years, in the western world, intellectual skills were described in terms of nonverbal imagery to memory. Simonides, a Greek lyrical poet, designed a memory strategy were thoughts and things were recollected by imagining them (Paivio, 2014). According to Paivio (1983), dual coding is bound to happen with the picture than with verbal structure. As two fragments of memories are stronger than one, the dual coding theory suggested that memory for visual imagery may be superior than memory for words, that photos are simpler to recollect than words when it comes to retrieving information rather than simply a response. Furthermore, research advocate the likelihood of dual or multiple codes combining different modes of knowledge into one neural framework and passes it on to the brain (Masuda & Aihara, 2006).

Furthermore, the dual systems have an additive effect on free recall. Paivio (1991) stated, when two systems are at work in encoding and storing information as knowledge using verbal and specific visual representations is likely to be understood better than knowledge that utilizes message alone, sound alone, a mix of content and sound, or illustration alone. One medium that successfully convey abstract concepts using combination of text, imagery and audio is motion graphics.

Motion Graphics (MG) is a technique used in animation that mostly uses text as its major component in animation. It is a mix of different compositions of graphics, typography, image sequences, videos and CGIs (Brinkmann, 2008 and Bruckner, 2015). MG have the capability to allow a person to witness and discover the development and progression of the action (Barnes, 2016), which are helpful in the process of educating the viewer of the topic.

Motion Graphics is also used to communicate with the viewer and add depth to a story by presenting information using animated text and graphics. But even so, studies show that the condition for the animation did not really produce much better results compared to the static form. One of the reasons is the lack of difference was most of the time profoundly theoretical and infrequently dependent on objective information. Another is that there is the disproportionate amount of details that both outputs of static and animation conditions communicated (Bétrancourt & Tversky, 2000). As motion graphics is a type of animation and carries change after some time, the animation ought to be especially useful in remembering, understanding, and interpreting dynamic structures such as organic procedures, natural phenomena or mechanical gadgets (Berney & Bétrancourt, 2016).

Visual communication transfer ideas and information through things that can be seen such as motion graphics. Motion Graphics (MG) are used in diverse settings for the purpose of educating and engaging viewers (Barnes, 2016). According to Babic, Pibernik & Mrvac (2014), motion graphics have the ability to convey a large quantity of information. It gives the audience a different type of interaction than ordinary, static graphics.

The purpose of this study is to produce a translated Motion Graphics video of Culture as defined by Nick Joaquin using the Dual Coding Theory and Visual Communication in delivering the information to the viewers. According to an article that was posted for ThINQ (2017) and writer C. Isles (2016), the book that is of compilation of Nick Joaquin's thought-provoking essays are lengthy and vivid sentences of the deconstructed conventions of the Filipino culture

and targets the way Filipinos think. However, topics such as traditions lost and bygone eras are subjects that did not excite the imagination of some modern readers (Roces, 2009). Modern readers are those students that are in their youth, that according to the World Health Organization ranges from the age 15-24, and along with the transition, their reading motivation also decline, resulting in less time spent with text (Cockroft & Atkinson, 2017). The cause for this is the current image-ruled era, and mainstream technology flourish through visuals such as eye-catching images, stunning graphics and sleek material scheme (Veszelszki, 2016) in which motion graphics possess these characteristics that convey abstract concepts and visualize the elements of the book that was confined on imagination, and therefore deliver Nick Joaquin's take on Filipino Culture to the general public easily.

The use of colors and shapes from Visual Communication is a crucial part in presenting information, as according to Fahmy, Wanta & Bock (2014), visuals dominate a person's senses. Their study on Changzi's research further shows that humans are in need of detecting color changes and symbols such as semiotics that tend to resemble shapes that are familiar to a person. As such translating or creating semiotics of the book with shapes and colors greatly helped the respondents on visualizing the message. Additionally, Byrom (n.d.) states that people are able to remember 80% of what their eyes see, 10% they hear, and 20% of all the things they read, all individually. Proving that by using the factors of Visual Communication such as the use colors and shapes helped the viewers picture which then help pass the message of the book effectively. Second is that dual coding comprises the use of verbal and nonverbal imagery together. Moreover, according to Sternberg (2003), both visual and verbal are used to represent, store and recall information.

1.2 Statement of the Problem

This research is a case study on using the factors of Visual Communication (VisCom) and Dual-Coding Theory (DCT) with Motion Graphics in delivering information to people about the Filipino Culture as expounded by Nick Joaquin. Specifically, the following problems are formulated in conjunction to the main problem:

1. How to apply Visual Communication and Dual Coding Theory through Motion Graphics to develop understanding on Nick Joaquin's Culture and History?

2. How informative is the Motion Graphics to the target audience?

1.3 Objectives of the Study

- To develop a Motion Graphics video.

- To incorporate the factors of Visual Communication and Dual Coding Theory in Motion Graphics.

- To determine the amount of information in the Motion Graphics.

1.4 Assumption

The study assumes that the application of Visual Communication and Dual Coding Theory in presenting information through a motion graphics video of excerpts from Nick Joaquin's Culture and History will deliver the message in a more efficient way to the modern readers. As the book contains information that cannot be found in any history books as it was written in a non-conforming way, it will be a great loss for it to not be able to deliver the information that the book has to offer to the public, the information will be provided through motion graphics using Visual Communication and Dual Coding Theory in using both audio and visuals.

1.5 Significance of the Study

The study focuses on passing the translated information from the book in motion graphics by using the Visual Communication and Dual Coding Theory framework. Its significance in the industry as a medium is that it uses effective ways in delivering information from books without having to read them and be able to take advantage of modern technology. The study also has a strong social significance, as this medium will be used to tell the keen insight of Nick Joaquin on Filipino culture.

1.6 Scope and Limitation

The study emphasizes on developing a Motion Graphics that presents information from the book with the application of the characteristics of Visual Communication and Dual Coding

Theory. The information that is to be presented is already in existence, which is in the book written by Nick Joaquin entitled Culture and History. The data gathering was done through a case study by collecting related research, together with a quantitative research through surveys and qualitative research in the form of online interviews. For the analysis of the data, pragmatic constructivism was implemented to form a final quantitative and qualitative data which will interpret the combined context of the research that was conducted and the different information in the respondent's answers on the appeal and effectivity of the work in delivering information.
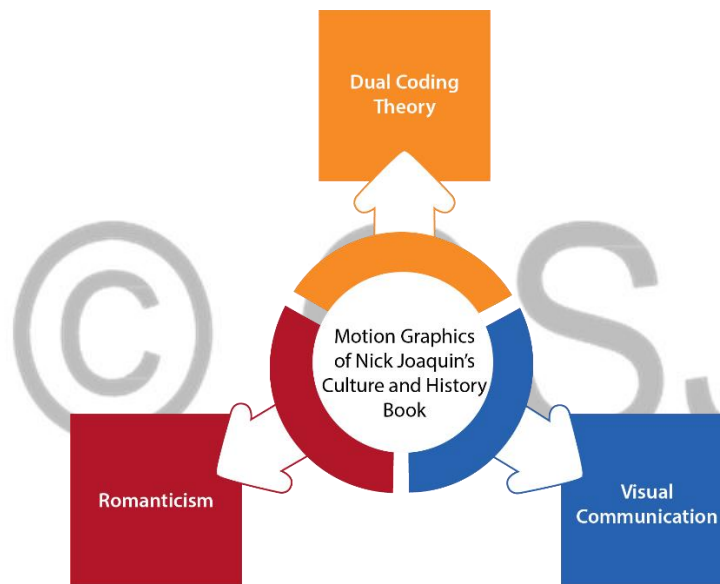
II. FRAMEWORK

2.1 Theoretical Framework

Fig. 1: *Theoretical Framework*
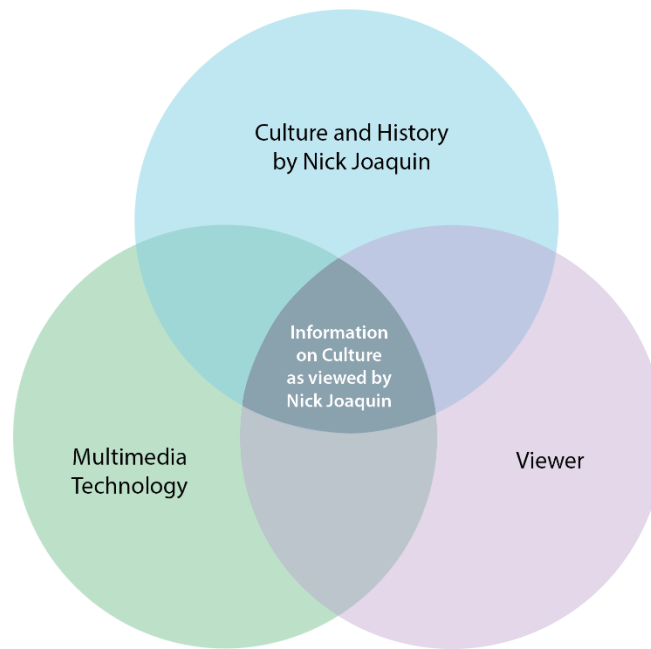
2.2 Conceptual Framework

Fig. 2: Conceptual Framework

III. METHODOLOGY

The philosophical assumption of this research is Pragmatic Constructivism that utilizing the methods that help deciphering, processing and handling information is important in order to accommodate results that deliver the findings with consistency and applicability. According to Merriam (1998), maintaining a constructivistic approach to case studies provides the researcher the ability to construct reality through socially and experientially formed concepts and understandings. Pragmatism is involved with practice, transition and how information and behavior connect, which is a suitable research approach to intervene in the world and not just watch the world. As pragmatic constructivism acknowledges the use of quantitative method; and as the book contain information that are not available in other history books due to it being written in a non-conforming way, this study used a quantitative and qualitative method of research, in order to gather the amount of information that the viewer's acquire, and the effectivity of a motion graphics translated book on Culture and History. Cropley (2019) stated that every human has a personal view of the world on the basis of his or her specific interactions with people and other factors of the external world. This would mean that in order to formulate a conclusion of the effectivity of motion graphics as an effective medium, using the quantitative and qualitative method to get each viewer's personal observation and interpretation is necessary.
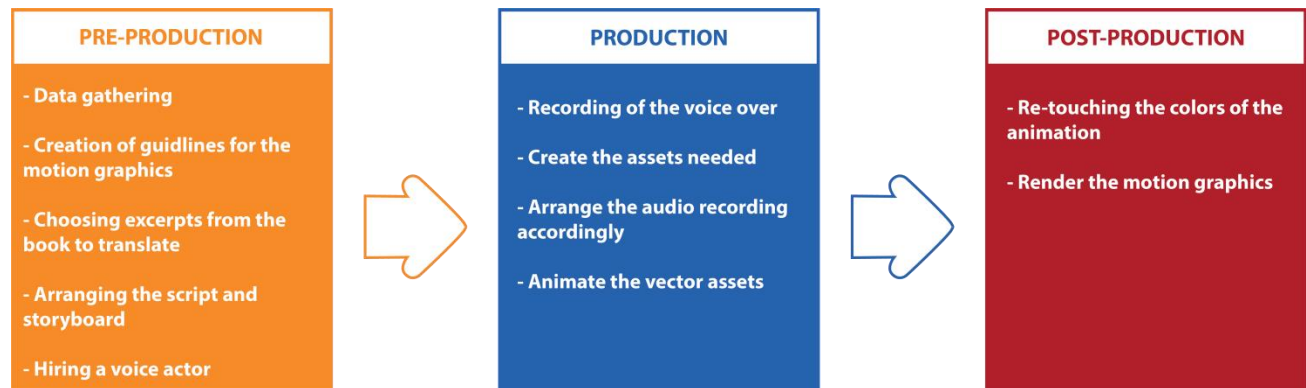
Additionally, as triangulation was used, feedbacks from motion graphic artist were added in order to gain multiple perspectives

The research design have used a case study for the purpose of producing a motion graphics to present information effectively by utilizing the characteristics of Visual Communication and Dual Coding Theory. According to Teegavarapu and Summers (2008), in doing design research, case studies are used in order to analyze phenomenon, generate a hypothesis, and to validate a method. This allows the researcher into investigating deeper and examining all the data collected in detail that are helpful to the study.

a. Checklist

Visual Communication	

1. Colors
    - Appropriate color palette that is pleasing to the eyes.
    - Develop an attractive color decoration that give emphasis on the visual elements.	

2. Shapes
    - Suitable shapes for the projection of images.
    - Develop attention grabbing shapes.	

Dual Coding Theory	
1. Imagery - Clean and understandable visual image	
2. Audio - Clear audio	
3. Compatibility of the visuals and audio - Well-matched visual elements together with the audio narration.	

3.1 Development Process

PRE-PRODUCTION

- Data gathering

- Creation of guidlines for the motion graphics

- Choosing excerpts from the book to translate

- Arranging the script and storyboard

- Hiring a voice actor

PRODUCTION

- Recording of the voice over

- Create the assets needed

- Arrange the audio recording accordingly

- Animate the vector assets

POST-PRODUCTION

- Re-touching the colors of the animation

- Render the motion graphics

3.2 Research Design

The research design used a case study for the purpose of producing a motion graphics that present information effectively by utilizing the characteristics of Visual Communication and Dual Coding Theory. As stated by Teegavarapu (Et al, 2008), case studies are used in design studies in order to investigate phenomenon, generate a hypothesis, and to validate a method. This allows the researcher into investigating deeper and examining all the data collected in details that are helpful to the study.

Mixed method was used in this research study wherein qualitative and quantitative survey questions were gathered. The survey has two (2) parts: first part is a pre-test, wherein the answers were based on the information they gathered through reading, and a post-test, wherein questions were about the information the respondents have gathered in the motion graphics video that was presented to them. The interview questions consist of questions related to the creation of the output which has participants of five (5) Senior High School students, 10 (college students). Additionally, the researcher looked for a second opinion regarding the motion graphics output and provided them with a set of interview questions. Lastly, the study used triangulation with the information gathered from interviews, surveys and research data.

3.3 Data Gathering Procedure & Instrumentation

Since the study employed triangulation, qualitative and quantitative data collection methods were analyzed together with interviews from the motion graphics artists, and lastly from the research data. In the pre-production process, the researcher was able to gather data from multiple literatures that help the formulation and the development of the motion graphics with

the use of the factors of Visual Communication and Dual Coding Theory as a center of the study in making a motion graphics output. The researcher then proceeded in the creation of the guidelines in the form of research instruments in order to serve as a guide in translating pieces from the book into a motion graphic. Part of the process in the creation of the motion graphics is the involvement of the research participants that help determine the amount of information that they have gathered from the excerpts of the book Culture and History by Nick Joaquin in a motion graphics medium. As such, the researcher reached out to the target audience ranging from the age 15-24 to answer the survey and receive feedback from the motion graphics output through questionnaires. Lastly, the researcher interviewed motion graphic artists in order to gain a second set of feedback from the professionals in the field.

IV.   RESULTS AND FINDINGS

The total number of the participants which are the modern readers were 15, five (5) of them are Senior High School students, while the remaining ten (10) are College students.
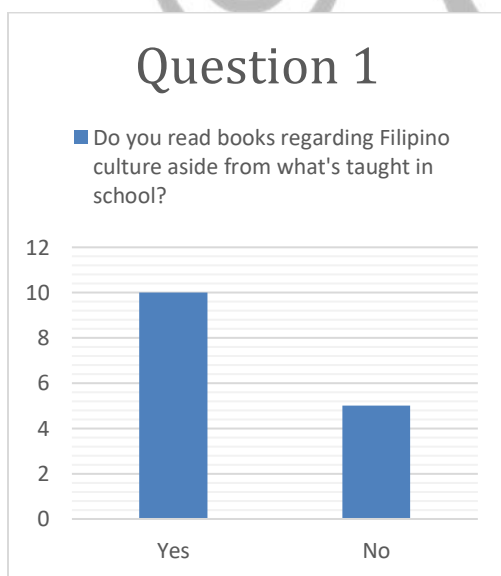
4.1 Pre-test
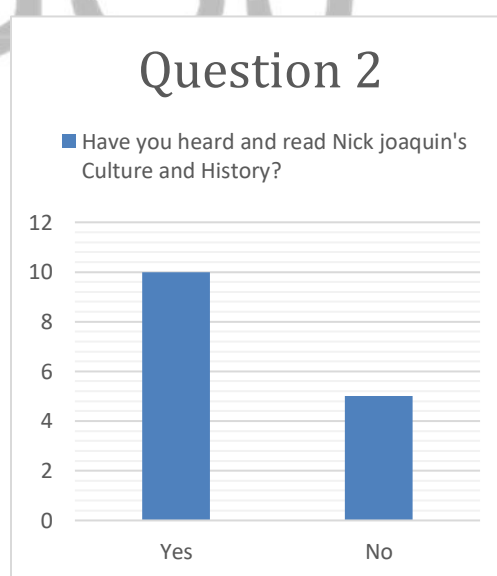

Fig. 3: Interview Response   *Fig. 4: Interview Response*

QUESTIONS	ANSWERS
After you have read a part of the book, what information and details do you remember?	The most common answer that the respondents have given are all simple memorable words like the following: • Tingi • Afraid of anything risky • Afraid of venturing out • Rice terraces is small • Small scale

Fig. 5: Interview Response

The results have shown that even though the participants stated that they read books on Filipino culture outside of school, the answers on what they remember after reading the chapter are all basic understanding and didn't completely made them remember everything that was said mentioned. However after that questionnaire, they were provided of the motion graphics output and was asked to continue on with the survey.

4.2 Post-Testing

QUESTION	ANSWERS
After watching the motion graphics, what do you understand and remember? What are you point of view regarding Nick Joaquin's book?	Respondent 1: Filipinos have remained that way due to being afraid in venturing out into our comfort zone. Respondent 2: Nick Joaquin thinks deeper

	and sees the "small" culture of the Philippines like nipa hut, baranggay, and tingi trade. It is translated well in the motion graphics video.
	Respondent 3: We don't notice that our artifacts are all miniatures and the only big thing that we have is the rice terraces.
	Respondent 4: Nick Joaquin is correct, we put in so much effort for things that are so little
	Respondent 5: I've clearly seen that we're afraid of venturing into risky situations that could've helped us improve our culture
	Respondent 6: The same as what I have read that we're afraid to take risks and venture out in the end all we do are what we are used to. Additionally, the visuals and audio made absorbing the information easier and much more memorable.
	Respondent 7: Nick Joaquin's observations of our reality are spot on. They're things we don't notice ourselves and just keeps on going

with it without thinking.

Respondent 8: the same information as i've read but better, it left an image in my mind how society's mindset of filipinos made me sad. they do not think dynamically but rather think petty. i would very much like this to be exposed in the public and make this Heritage of Smallness be known; though small but holds so much value.

Respondent 9: A more detailed and engaging look on the notions Nick Joaquin brings up in his book through the use of motion graphics. Filipinos work on and buy small things.

Respondent 10: The animated visuals together with the audio explained the book's message to make people realize that in order for the Filipinos to have a reason to be proud of something and have a right to brag about it, breaking and destroying the things that we have grown up with is the best thing for us.

Respondent 11: The people in our country can be viewed as hardworking but we need to

change our system in the industry because that things that we are proud of aren't that great.

Respondent 12: I agree to what Nick Joaquin is pointing out, we filipinos have gotten used to our culture and tradition that has been passed down for years and it's something that isn't worth bragging because it only makes us petty kings who are proud of things that are small.

Respondent 13: All the things that we're proud of are actually small and almost insignificant compared to a creation that the world views as epic.

Respondent 14: Regardless of the hardwork of Filipinos,, our development is far from those of other countries

Respondent 15: The times have evolved but even way back, all the things that our culture have are all small due to our nature of being scared of things that are unknown to us.

Fig. 6: Interview Response

Based on the answers from the respondents after watching the motion graphics, the information that they retained showed a deeper understanding on the message from Nick Joaquin's book. The were able to almost fully grasp what was being presented to them.
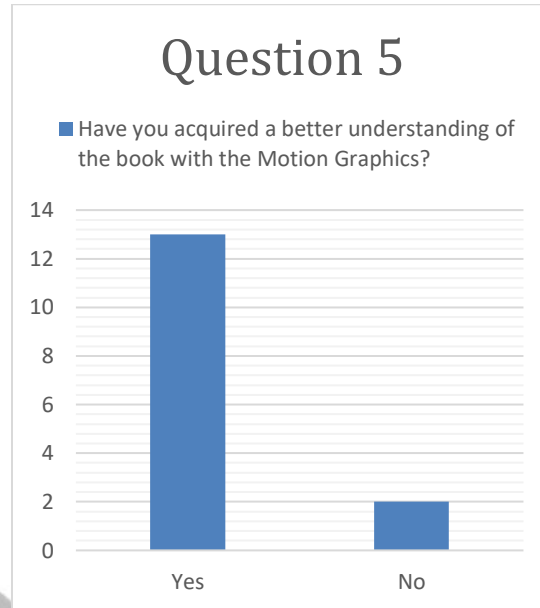

Fig. 7: *Interview Response*

For the 15 respondents, 13 (86.7%) of the respondents' answers shows that they have acquired a better understanding of the book by watching the motion graphics, while 2 (13.3%) of them answered that reading the book was better as watching the motion graphics didn't give them additional knowledge of understanding the book. As the majority of the respondents stated that they had acquired a better understanding with the Motion Graphics, this would mean that the study was able to use Visual Communication and Dual Coding Theory that helped with the information presentation to the modern readers.
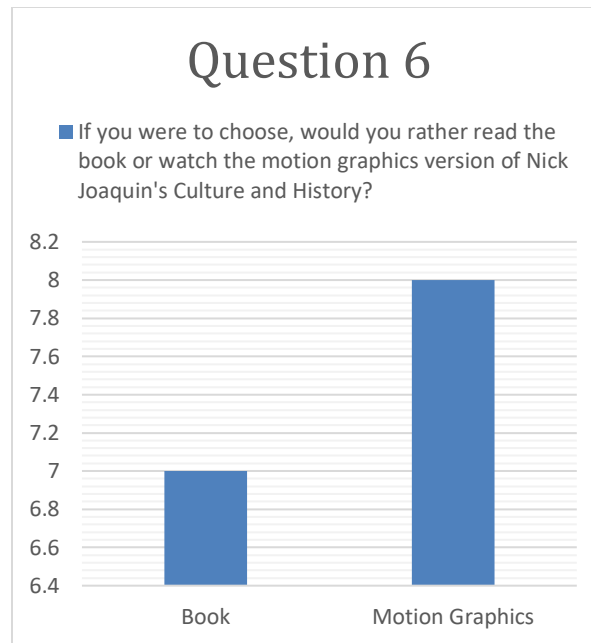
Fig. 8: Interview Response

For the last question of the survey, 8 (53.3%) of the participants who are book readers answered that they now would rather watch the motion graphics of the book showing an increase with the appeal of motion graphics as a source of information while 7 (46.7%) of the participants answered that they would still rather read the book showing a close fight between the appeal of motion graphics and books to modern readers.

V. Analysis

Based on the data from the review of related literature that the researcher gathered on the effectivity of using Visual Communication and Dual Coding Theory on Motion Graphics resulted on an 86.7% positive response to the information delivery quality of motion graphics. According to motion graphic artist professionals that have knowledge on the use of motion graphics, stated that visual elements and audio helped with the linking of the elements in the motion graphics. This because one, the use of colors and shapes from Visual Communication is an important part in presenting information as according to Fahmy,Wanta & Bock (2014),

visuals dominate a person's senses. Their study on Changzi's research further shows that humans are in need of detecting color changes and symbols such as semiotics that tend to resemble shapes that are familiar to a person. As such translating or creating semiotics of the book with shapes and colors greatly helped the respondents on visualizing the message. Additionally, Byrom (n.d.) states that people are able to remember 80% of what their eyes see, 10% they hear, and 20% of all the things they read, all individually. Proving that by using the factors of Visual Communication such as the use colors and shapes helped the viewers picture which then help pass the message of the book effectively. Second is that dual coding comprises the use of verbal and nonverbal imagery together. Moreover, according to Sternberg (2003), both visual and verbal are used to represent, store and recall information. Leading to the result of the survey that was done.

VI.   DISCUSSION

6.1 Conclusion

In this study, the researcher aimed to develop a Motion Graphics using Visual Communication and Dual Coding Theory. Specifically, the study aimed to translate excerpts from the book Culture and History by the author Nick Joaquin with the aim of accomplishing the following problems: (1) To develop a Motion Graphics Video. (2) To incorporate the factors of Visual Communication and Dual Coding Theory in Motion Graphic. (3) To determine the amount of information in the Motion Graphics. Through the use of various methods conducted in this study, I therefore conclude that the factors of Visual Communication and Dual Coding Theory can be used in aiding motion graphics in visual storytelling which were proven through the related literature and data gathered. The results of the lacking effectivity of motion graphics that were conducted in previous studies were addressed and solved through the use of Visual

Communication, Dual Coding Theory, and other related literature. Since the eyes works best with the ears and are connected to each other, taking advantage of that provided better results. Another is the previous reason of motion graphics not being any better than static conditions such as lack of difference that were most of the time highly subjective and basing barely on objective data, were addressed properly as the motion graphics came from a written and published book.

6.2 Recommendation

Based on the results, the researcher recommends the following to improve the study:

- As the medium of the study is motion graphics, combining 3D with the motion graphics can add more visual factor that can attract the viewer more.

- Use other art styles may be used depending on the content that can help appeal the delivery of the output to the audience.

- Adding other components of Visual Communication such as tones and texture.

- Adding of texts that would emphasize certain words in order to give more impact.

- Add other theories that may be linked with the study.

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