Full Paper

Applying Gestalt Variables in Learning Photography with Virtual Games

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Graphical abstract

Abstract

Photography is one of the major disciplines for graphic students. This course is usually conducted during the early semesters of studies and students are usually exposed to a basic level. Only after years of training and in the field studies, students are able to acquire the correct skills and techniques in photography. Therefore, early photographs produced by college students display a lack of merit and are less superior in quality. Moreover, these pictures look empty and any sublime messages, intended for the audience, are conveyed in a vague and misleading fashion. This paper defines six variables of the gestalt theory for enhancing the students' skills and performance in photography. Gestalt theory can be used and applied to develop artwork into being more interesting and vibrant. The conceptual model is introduced and aims for educators to use it as a guide for teaching photography in their courses; so that students can upgrade their skills and performance earlier and make use of game based learning as an interactive media for learning photography.

Keywords: Photography, Gestalt theory, online game, serious game

1.0 INTRODUCTION

Prolonged reading is a major obstacle for some students to remain focused on their studies. They are usually not interested in reading books, texts, or notes, if these materials are not full of pictures or graphics. They prefer to look at pictures first and try to comprehend them by reading the captions below. Early studies have shown that pictures can be easily understood and interpreted by an audience, because they can relate more to the picture than trying to configure or gauge the meaning of text. Two instruments that can be used to enhance photography learning are multimedia game based learning and gestalt.

1.1 Multimedia Game Based Learning

Mayer [1] states that knowledge can be easily understood and captured, if both picture and text are present. Text alone is not enough and could inhibit the learning. A longer time is required if the student tries to interpret and configure what is the actual meaning of the text. When text is presented with a related picture, the student can easily understand; and learning can be effortless. Furthermore, learning can be more interesting if the media is more interactive or connected to the student.

One interactive and engaging tool is known as multimedia based learning. Multimedia learning uses the elements of sound, pictures, video, and animation. Students find that multimedia based learning is more fun, engaging, and allows them to perform in their own time. Multimedia based learning provides feedback on the student's learning progress. Another form of popular multimedia learning uses games as a tool. For example, serious games have been used for teaching in the areas of military, health, business, and education. This paper will define a guideline model for educators to use to teach photography through game based learning as an interactive media.

1.2 Gestalt

The form or shape of objects presented in a picture can be grouped into a common definition. Gestalt theory aims to organize these objects into six different definitions of closure, figure ground, similarity, proximity, continuity, and common fate. All these definitions will be explained in more detail later in the next section. By implementing the gestalt theory, a picture can be more interesting, presentable, and refined.

2.0 PHOTOGRAPHY LEARNING APPROACH

Nowadays, the conventional method of teaching is hardly engaging to the younger generation, since they have grown up in a digital era, where self learning and active exploration are more common. Instead of exposing them to interactive learning, they are kept in the traditional way of teaching, using basic methods. For example, in the classroom, teachers will first explain to students and then give them notes for them to read or refer to during the lecturing. Sometime teachers prefer to write on a white board and explain using slideshows of photographs. Conventional teaching is a more teacher to student relationship than the other way round. Even if teachers try to ask for feedback or questions, students tend to shy away from giving a reply, thus keeping mainly to themselves. This is one of the reasons why students do not understand or not interested to learn.

However, a better approach uses virtual games, where students are be able to learn gestalt, whereby videos and pictures about gestalt theory are placed into the game for them to learn either with the educator or by themselves. Meanwhile, they will enjoy the learning environment and be interested to learn gestalt. In this virtual game, they can practice shooting photos and the teacher can observe the pictures that have been taken in their own albums.
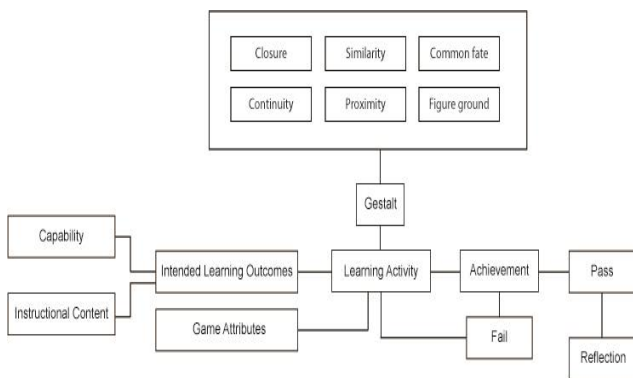

Figure 1 Photography learning model applying Gestalt variables using a virtual game

3.0 RESULTS AND DISCUSSION

Creating a new environment for graphic students to learn photography by applying gestalt variables aims to ensure that students can understand gestalt variables and be able to improve their photography skills. This is a new approach for students to remain focused on what they have learned. Students will experience learning in a game world, whilst socially interacting with other students and the teacher. Figure 1 shows a conceptual model that will imply these gestalt variables inside the virtual game. The detail description of each block of Figure 1 will be discussed in the next section.

3.1 Capability

Capability refers to skills in photography, accustomed learning in a new environment using gestalt theory. Skills in photography include the capability to identify gestalt theory in a photograph. Accustomed learning in a new environment includes students fitting themselves to learn in a new educational environment in a virtual game. Gestalt theory learning includes being capable of understanding the six rules of gestalt. The six rules of Gestalt are closure, figure ground, similarity, proximity, continuity, and common fate as for example shown by Figure 2.

Figure 2 This is the example of closure, which is the empty space had been filled

3.1.1 Closure

Closure is an object or space that is incompletely attached. People are more interested in filling in missing information than a complete shape. There a various ways to make a viewer stare at your photograph; one of which is to make them complete an image, shape, or idea. For example, fill in the blank, what if 'blank' replace with dashed? People still read it as 'blank' too. This is closure. Our brain has the capability to complete the incomplete shape or subject, and fill in the missing pieces. With this capability, the viewer will become interested in viewing your photograph only, and they will stare for

a longer period of time. The example for closure approach is shown by Figure 3.

Figure 3 This is the example of figure ground, which is the subject is more prominent than the background

3.1.2 Figure Ground

Figure ground is where the subject is more prominent than the background as featured in Figure 4. This highlights the main subject to the viewer, based on a number of possible variables, like contrast, colour, size, etc. Anything that is not a figure is considered as ground. As our concentration shifts, the ground will shift; and the object goes from figure to ground and back again. Ground is also thought of as being negative space or background.

Figure 4 This is the example of similarity, which is the shape of subject are similar but one of them had different pattern

3.1.3 Similarity

Similarity is the repetition of a shape or colour; In an arrangement that is similar to rhythm in music, the shape is not compulsorily alike. Although there will be enormous variety within the repetition, the

correspondence can still be discernable. Similarity (or repetition) is a picture that often has connotations of harmony and interrelatedness, or rhythm and movement. Figure 5 shows the example for this similarity approach.

Figure 5 This is the example of proximity, although they had different shape and colours, but it look good when combine together

3.1.4 Proximity

Proximity is shapes or objects that are close to each other and appear to form a group as shown by Figure 6. Even if the shape, size, or the object itself is not the same, they will look good when they are close all together.

Figure 6 Example of continuity

3.1.5 Continuity

Continuity is a continuous form that gathers with other forms or the edge of the image plane. Continuity comes in the form of lines, edges, or directions from one to another, to build a link between the composition's parts.

3.1.6 Common Fate

Common fate is an object that moves in the same direction that is related to another, rather than an element that appears to be moving in a dissimilar direction as shown in Figure 7. The entire related object shares a "common fate". These six rules will be applied in a photography project. Students will learn how to shoot photographs and apply these rules in their work.

Figure 7 This is the example of common fate, which is the object move in different direction

3.2 Instructional Content

Instructional content is the issue that it is intended for the student to learn. The details of the actual subject matter to be learnt, or the type of content that the student learns, could be a comprehensive list.

3.3 Intended Learning Outcomes

Learning outcomes is the goal to achieve from the virtual game. An intended learning outcome is a specific combination of capability and subject matter. For example, the student should be able to operate the virtual game without the educator's guidance. They should be able to learn about gestalt on their own, by entering a room in the virtual.

With regards to the combination of gestalt and photography, the student should be able to use gestalt variables in their photography. Their photographs should have all six rules of Gestalt. For example, a photograph that uses the closure variable, should apply a significant object that is incomplete, or a space that is not completely enclosed. All of the student's photographs should be capable of being placed in an advertisement.

3.4 Game Attribute

Game attributes are those aspects of a game that support learning and commitment. The game's attributes are developed based on the critical thinking that results from a literature review on behaviorist,

cognitive, constructivist, educationist, and neuroscience perspectives. Game attributes include:

- Incremental learning provides learning equipment and introduces learning activities incrementally. Intended learning outcomes are addressed one by one; and not all at once.
- Linearity is the extent to which learning behaviorist sequenced by the game (and would suit a serial learning style), and the extent to which an active student may be able to construct their own sequences.
- Attention span concerns the cognitive processing and temporary memory loads placed upon the student by the game. These loads are required to be carefully calibrated to the target student.
- Scaffolding is the support and help given out by the game during learning activities.
- Transfer of learned skills is the support provided by the game to improve the application of previously learned knowledge to other game levels.
- Communication is the extent to which the game's activities require responses and engagement from the student.
- Student control is the degree to which the sthudent can direct their learning activities within the game, and provide self-study and self exploration to fit their own experience.
- Practice and drill provides for repeating learning activities with increasingly harder tasks for increased achievement of the intended learning outcomes.
- Irregular response is the extent to which every game's interaction receives feedback, or whether response is provided less frequently.
- Rewards are arrangements in the game to persuade the student to remain and keep their motivation high.
- Situated and genuine learning involves the provision of a gaming environment (or world) where the student can link learning to their needs and interests in the outside world.
- Accommodating to the student's styles refers to the game's ability to fit or bend to different learner styles by offering variations in game play.

3.5 Learning Activity

- In the learning activity, the student will enter a virtual game with their friends and educator, to learn about gestalt and how it works with photography. In the first class needs to show them the benefits of using virtual worlds, demonstrate what students of all ages have accomplished in only a few days, and provide a brief introduction on how to use the tool effectively [2]. The student will be under their educator's supervision about how to operate the virtual game. To begin with,

the educator will lecture them on how to operate the game. Next, they will be released to explore the virtual game and attempt to operate it by themselves.

- Videos about gestalt will be placed in a room inside the virtual game along with notes about gestalt for students to study and revise. Students can correspond with their educator and other students in the game. Whoever misses the class can revise the gestalt variables by entering the game or they can ask the educator directly from inside the game.

3.6 Achievement

Achievement is the result of the student to achieve their goals or not. They will go outside and take pictures on their own without guidance from the educator. By this time, students should have an adequate understanding of the six gestalt variables, and be able to shoot photographs by applying them.

All of the pictures taken will be processed by the educator. The educator will review the photographs, as to whether they contain the six gestalt variables or not. The student should then be able to determine whether their photographs had the six gestalt variable in each of them.

3.7 Fail

Students who did not understand and did not know how to apply gestalt in their photographs. They could not spot whether their photographs had the gestalt variables or not and they were unable to produce wonderful photographs.

Students did not improve their photography skills, their photographs were not able to be put into an advertisement, and they did not achieve the required merit. The student's entire photograph did not contain gestalt variables.

The student had to go back to the learning activity level, which means they had to learn and revise gestalt again by re-entering the virtual game. They had to repeat shooting practice until they were capable of producing a photograph of merit.

3.8 Pass

The student who improved their skills and understood how to apply gestalt in their photographs. They were able to produce a variety of magnificent photographs, based on the gestalt variables.

The student's photograph was capable of being included in an advertisement. All of these photographs will be consent to by the educator, and defines as having achieved the required merit.

3.9 Reflection

Reflection is where the student thinks about the reason for the learning activities that have been undertaken,

and then decides the strategy to be used during the next activity. Reflection should take place within the game without letting the student step out of the game world; this can be done by offering reflection activities within the game. Garris *et al.* stated that the reflection activity can be included within the game by providing an explanation of why this activity was chosen, a discussion of the errors made by the learner, and several corrective suggestions.

4.0 CONCLUSION

Gestalt variables are important things to apply in photography. Creating a new environment in the learning process could increase the student's interest to learn and help the student to understand the subject more easily. Communication between student and educator in the class and in the virtual game is different, because the educator finds it easier to approach the student and identify problems faced by the student.

Future work will include a designed virtual game complete with all the gestalt variables. In addition, an experiment will be conducted on the university students to determine how effective the designed framework in the Figure 1.

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