Visual Fantasy In Children’s Learning Through Virtual & Augmented Reality

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Abstract: The aim of this study is to analyze the impact of using virtual reality technology and augmented reality as a medium of learning for children. Virtual technology and augmented reality are often used as interactive learning media to illustrate how living things interact, with the application of animations as a simulation of aesthetic elements that appear real, though false. Moreover, the reality is due to the power in the presentation of gestures, expressions, and movements of visible things, hence, the visual pseudo-appearance seems impossible in real life. This media has kindled the emotional intelligence of children, enabling an increase in the freedom of expression. Furthermore, research using this phenomenology methodology established the scientific contribution of technology learning essence, leading to the emergence of visual fantasy in children. This encompasses the imagination that appears within the mind as though they were real. In addition, this creates a space, which seems to be unlimited, as the visual elements are colorful and rhythmic, while the wildness of creativity enhances the effectiveness of learning systems, through this technology, as well as attaining the position of being children’s preferred choice.

Index Terms: Visual Fantasy, Learning, Virtual Reality, Augmented Reality.

1. INTRODUCTION

This research analyzes the impact of utilizing virtual reality technology and augmented reality, with the material life of living things, as a medium of learning for children. Virtual Reality (VR) is a technology created to enhance the interaction of users with an environment simulated by a computer. [1] In addition, what is observed is usually in form of an image, which is not real, widespread from manipulation to fantasy from something materialistic. Augmented Reality (AR) is a concept that shows virtual objects in a real environment.[2] Corderio et al. (2015) asserted that it to be understood as a system that combines the physical world with virtual elements (3D), permitting the interaction between both objects in an instant. [3] This, therefore, depicts a combination of new image virtual form with the reality object variety.

Furthermore, the main objective of AR is to generate a new environment through this interaction. Finally, the user experiences that the simulation as though it were existent, because they do not feel the difference with the real environment. [4] The augmented Reality technology does not depend entirely on reality, although several virtual objects in the form of 2 (two) or 3 (three) dimensions are added into the physical environment, which is then displayed at the time of combination. [4] The event "Future Park and Animals of Flowers, Symbiotic Lives" was held at Gandaria City Mall, Jakarta between June 20 and December 20, 2019 as the first exhibition, as well as the largest interactive installation art in Indonesia. This included Virtual and augmented reality technology presentations initiated by TeamLab, encompassing creative experiences, which allows visitors to collaborate and create personalized art. In addition, the concept of co-creation was intended for children, however, many teenagers and adults also visited, concurrently. Furthermore, there was a novelty in the form of design, different from virtual reality that had been shown in Japan and Singapore, which tends to be the same.

Co-Creation became a concept that TeamLab, Japan, appointed at this event as there was a tendency for learning systems to reduce creativity, although humans inherently possess a collaborative and creative nature. In addition, free thinking is somewhat blocked, as the phenomenon of smartphone dependence enhances connectivity amongst individuals, with their bodies being isolated. This process, therefore, deescalates as the concept intends to create a change in social relations. There is a need for humans to take resourceful actions individually at first, followed by a communal activity, applying themes that enhance the ability to discover greater creativity in answering problems of daily life. Visitors are directed into a dark hallway that leads to a glowing room, where a wide variety of plants, flowers, reptiles, swarms of land animals, and underwater creatures exist as the narratives illustrated in the virtual reality technology. This was centered on the orientation of how to create interactive responses from visitors, with an expectation to be educated, entertained, and remembered. In contrary to non-interactive media, where objects do not move when touched, and oftentimes leading to visualization being ignored, the problem in this study is the possibility of the learning process not occurring. In addition, there was also a probability of the creative process, which has consumed time and costs in the production of virtual reality, being considered unattractive, frightening and banal. Therefore, how does its impact bring children's fantasy and imagination into content, in order to unravel an interesting learning process occurs?

2 THE HYPER-REALITY OF VISUAL FANTASY IN VIRTUAL AND AUGMENTED REALITY LEARNING MEDIA

In previous studies, Akemi Gálvez and Andrés Iglesias mentioned “Educational systems strongly rely on engaging students, therefore, providing the opportunity to teach under different learning styles and skill levels.” [5] However, the implementation of Virtual and Augmented Reality technology as an alternative novelty of 'learning media' is intended as a tool to channel messages, stimulate minds, feelings, attention, and willingness to encourage the occurrence of deliberate, purposeful, and controlled learning. [3] Furthermore, one way to present this stimulus is to utilize visuals designed in a hyper-reality style, with the idea that an image on screen feels more
actual than reality. According to Baudrillard, the original reality is shifted and replaced by pseudo-reality, which is duplicated, made similar, or simulated in the form of simulacra (simulation of reality), encompassing references that emerges from its absence, termed hyperreality. [6] Fantasy is something that relates to the imagination of mind, or with objects that are non-existent, which is merged with reality, into the views and minds of humans. Furthermore, the world is entering a new reality, which is created by compaction, compression, summarization, diminution, and acceleration of the universe. [7] The animations created are responsible for generating fantasy and simulate aesthetic elements which appear genuine, although they are not. This colorful visual play, therefore, becomes the main attraction for children, through the inherent color compositions, object animation movements, and patterns that respond interactively. Based on the studies, “Effects of color stimulation on performance and activity of hyperactive and non-hyperactive children,” and “The Effects of Color on the Moods of College Students,” [8], [9] it is shown that the effect of this form of color stimulation, as well as its emotional impact, which turns out to possess cross-cultural similarities. This indicates that amongst others, blue and green were good, yellow was weak and bad, red was strong and active, black was bad, strong, and inactive, gray was bad, weak, and inactive, white was good and weak, while the color was good and active. However, further studies criticize their precise influence on emotions, as this cannot be denied and ignored. Previous research on the effectiveness of virtual reality media shows the paradigm of development in the field of educational technology today to have such great potential in supporting social transformation, meaning it has a significant contribution in changing the social conditions of people in a superior direction. [3] In addition, changes in this condition are considered a social transformation in the form and function of society that affect the public system, including values, attitudes, and patterns of behavior, as well as the interactions between different groups of people. This, therefore creates awareness of not being alone in this entire universe, rather, togetherness is needed through creative collaboration, and hence, this wisdom is ideally to be taught early.

3 RESEARCH METHODOLOGY
This research uses a phenomenology method, which is a scientific approach aimed to examine and describe an occurrence, as experienced directly by humans in daily life. [10], [11], [12]. Meanwhile, Husserl's phenomenology theory appears less structured, hence, there was need for the addition of other analytical methods considered to be more appropriate for the object of this research [13]. Furthermore, the Husserl technique requires an ideal scientific approach without the process of possible interpretation, but Martin Heidegger stated this as not achievable, with the argument that every human uses personal experience at instances where the process of interpretation always occurs [12]. Therefore this analysis simulates an imaginative understanding that arises in children. This research begins with evaluating the visual structure of VR, initiated with inquiry on how the audience read the appearance of icons and motion with the resemblance of living things. Moreover, the second stage leads to how the combination of visual elements stimulates to be touched, as well as the response to the audience's contact, and the final stage investigates how to achieve the essence of a visual form presence that evokes children fantasy. This turns out to be the phenomenological finding of virtual reality technology-based learning. According to Spiegelberg,[10] deepening the analysis needs requires paying attention to several elements, including:

1. Observing the phenomenon of interactive media presence,
2. Exploring the essence and pattern of its interrelationships,
3. Identifying patterns of an embodiment of a phenomenon,
4. Exploring its structure in human consciousness,
5. Bracketing,
6. Interpreting the implicit meanings.

From the numbers listed, 3 (three) basic elements that best fit Husserl's theory of phenomenology were chosen; these are description, bracketing, and intuiting. There were consistent efforts to maintain honesty in the analysis and description of the truth that emerges towards the imagination of children, as the essence of the phenomenon of VR technology-based learning.

4 VISUAL FANTASY ANALYSIS
4.1 The Fantasy of the Nothingness of Man in the Universe
The animation of grass, weeds, leaves, and blossoms of flowers appear to overlap and decorate the entire wall and floor. (See Fig.1, Fig.2). Furthermore, in the darkness of this space, insects, a lizard, which creeps on the tip of the leaves, and subsequently moving to other leaves were seen. Virtual reality describes the illustration of a savanna or meadow, which seems to create a space that, circles the visitors, and children's footsteps stimulate the motion of plants, grass, and flowers to shine more brightly. This motion also turned the light on, which further intrigued them to run and roll happily on the floor, therefore, simulates a beautiful meadow. Therefore, the public has been bracketed in a colorful hyperrealist room, with illustration animation that evokes the fantasy of visitors entering a vast and wild, but colorful, savanna. This promotes their entrance into new spaces, where floating and jumping here and there is allowed. In addition, fear becomes non-existent in this room, as various movements of creatures, which are normally considered creepy spread all over the room.

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**Fig. 1. Savanna Virtual Reality - As we immerse and meld ourselves into the work with other, we explore a continuity among people. As well as transcends the boundaries between people and the worlds.**
Joseph Bates in the book titled Virtual Reality, Art, and Entertainment, stated that “Virtual reality has the capacity to allow the entrance into personal fantasies, as well as the capability to go anywhere and perform any imaginable thing. Meanwhile, the public begins to understand the indication of a new medium, entertainment, and very powerful type of art,” [14] thus, the power of the storyline plays the role of a club. In addition, Bates emphasized that “The story provides intensity and meaning to the world, where finally, the world is presented in an effective and emotionally powerful style.” Furthermore, a child’s visual fantasy is created on entering a new screen, the novelty of space and experience. From a very early age, children naturally conduct Spatial Learning, which in principle ought to be remembered, especially the object’s location, concerning boundaries of the room, or distal landmarks, including the door, windows, or pictures on the walls. This interactive art form, therefore, ignites instincts for spatial interaction and exploration. [15] The analyses of intuitive stages show savannah virtual reality to raise a variety of imagination, which brings children to unconsciousness. Therefore, the closeness of the narrative of living things that were brought to the subconscious child seems to be better impregnated as they more closely observe how weeds spreads, and how behind the bushes exist other animals, living symbiotically to one another. In addition, the movement of butterflies from one flower to another is unconsciously educating the cognitive process of plant pollination, prior to flowering and fruit bearing, likewise, the existence of caterpillars on the base of a plant, contributing to the fertilization of the soil. Therefore, what is felt in the subliminally, brings back memories that have been taught in school.

Moreover, the pace of the creature with continuous motion makes the children eager to persist in chasing, while the bracketed children silently watched how the various land animals move. Furthermore, the narration of the savagery of living things, visualized by this interesting and stimulating light to touch, further, obscured the character. Children seen to be observant, recorded some movements, closing the distance between a kid and the object of a wild animal, hence, when this ferociously stigmatized creature is unapproachable, the fear fades. Meanwhile, from the experience of educators, after the early years, there is a feeling of fear, security, disgust, filth, which becomes an obstacle in the learning process. Disgust is a protective emotion associated with certain types of instinctive fears [17], which initially deters the willingness to approach moving animals. However, with VR obstacles, this feeling disappears, enhancing the openness to new experiences.

4.2 Fantasy of the Beauty Parade of the Animal Body
Subsequently, the children tend to enjoy the colorful beauty of the wild savannah, with eyes diverted to the motion of walking land animals (see Fig.3, Fig.4) in rows and silhouette filled with abstract illustrations of colorful moving flowers. Furthermore, various types of land creatures walked together. This pattern, therefore, becomes a VR visual structure, where the visitors’ touch on silhouettes of animals, stimulates movement, interrupting their steps to the point where the ornamental decorations on their body radiates. Subsequently, the glow of light regroups again into the silhouette that continues moving. In addition, various responses were observed, e.g., while touching the Giraffe, it bows its head, which is different from the response of deer that shakes its head. Animated virtual reality is as though playing games with children, as various studies pointed out that integrating the “game” into the learning process is a great positive and effective way of education. Hence, it could be taken into account that digital game-based knowledge is a strong and interactive method because it is of preference to most children. [16] In addition, they were invited to race after the animals, however, they finally, stay still because of the inability to catch up with bigger ones.
The steadfastness of those that were silent for a long period of time followed the indirect movement of the rhythmic beast, conditioned in the tempo of emotional calm. Meanwhile, music effected calmness in digesting matter. The rhythm beats and harmony affects human physiology, especially the brain waves, and heart rate, in addition to the arousal of feelings and memories [18]. This turns out to have been seen in the Virtual Reality learning experience, as the visual movement of animals also raise rhythms. The intuitive findings in this learning are devoid of pictorial steps, which create a rhythm in the subconscious. This, further, provides an atmosphere for the brain to be allowed to digest and remember an image that was, touched and also responds to stimuli.

4.3 Fantasy of Visual Wildness in Under Water Creature Motion
Illustration of underwater creature is seen in the decoration of a giant aquarium, which is constructed by a widescreen with several video projectors (see Fig.5, Fig.6). This encompasses various corals, plants, and animals underwater, moving as living things, which were merely animated illustrations, and not realist images. Therefore, motions mode for each creature were identical to the actual character and these structures were admired by visitors. In the section, Augmented Reality technology was used, which was in contrast to the previous two platforms that applied VR technique, where the entire objects are simulations. On this bridge, the scanned object was an illustration of the child, and the environment was also composed of aquarium environments. Furthermore, although it is possible that the background entered is created in the form of real water, what visitors observe was the merging of good compositions of sea animals inserted into an aquarium in an illustrative style. Initially, the children were asked to color the fields of several choices of sea animal images that had been provided, they were observed performing this quickly, without any references, due to ignorance of the next stage. Meanwhile, the ego of "I can do," arises psychologically, as based on the observations, the color technique is seen to have originated at the beginning. Furthermore, the images are scanned and automatically the results appear on the aquarium screen, where the motion characters become identical with fish falling into the aquarium, moving according to the character of the colored creature. This puzzled the participants and an extraordinary pride arose at the instance where their artworks, as well as others, moved up and down, right to left.

There is an observed wakening in the sense of the children to color more aptly, in order to enhance pride in their personal work as it appears more perfect. However, the coloring technique used was seen with a touch of gradations from dark blue to purple, orange to yellow, and others. Finally, the joy is observed once again in instances where the animal created on the aquarium screen emerges with better appearance.

In the next stage, the initiation of arousal to be creative using wild color compositions was observed, and the ornamental fish were colored in black, with the excuse of a desire to create ghost fish, jellyfish, colored with red and white polka dots as if fish, and wearing clown clothes. Furthermore, the names of children began to appear on the body of the fish, which resulted in laughter about the wildness of his expression. Excessive emotions may be considered as a form of shying away from others, due to the lack of cognitive skills, and some children possess significant knowledge that does not appear to be emotionally expressed while facing something. Another early researcher that contributed to the progression of emotional intelligence was Wechsler (1940), defining it as the "the aggregate or global capacity of an individual to act purposefully, think rationally, and deal effectively with the
environment.” [19] Therefore, a person in possession of such, oftentimes put themselves in a position of interacting with others. Hence, if children master this interpersonal skill, they accept the learning process better, as they are left to join at will. Salovey and Mayer (1990) formally coined the term, and defined it as “the subset of social intelligence, involving the ability to monitor personal feelings and emotions and that of others, in order to discriminate among them and to utilize the information to guide thinking and actions”. [19] Therefore, the presence of Augmented Reality media has successfully melted the atmosphere where Emotional Quotient (EQ) is more prominent than Intellectual Quotient (IQ), as fun and excitement enhances a non-judgmental disposition to differences in intellectual-cognitive intelligence amongst children. VR evokes photographic wildness, employing the appearance of creations to appear quickly, and the enlargement effect generates an impact that stimulates the emotional intelligence to interact. The media of virtual and augmented technology learning have succeeded in the collaboration of various ideas of children, which is then filled by living things maintaining their survival in this universe. In addition, creative collaboration inspires everyone enhancing the wealth of visual fantasies created. From the discussions with visitors, at first, the assumption was that they would be taken to space, digital rays or other planets. Meanwhile, the title of the “Future Park” event has been set conditions for many years to come, and the appearance of a balance in ecosystems, makes this event more grounded, hence, the futuristic concept is less visible, and what changes are significant both in structure of the form of living things, and their characters. In addition, the signs in the universe did not appear until now. As a criticism, both virtual and augmented reality do not generate the colors of local Asian culture, especially Indonesia, although it is possible to have Madura decorations on cow horns or Engano as the identity of birds on the island of Borneo. Moreover, as stated by Nila Desai, “History plays an eminent role in the societal representation of any place as heritage sites and monuments reflect tradition, art, and culture of the previous golden era.” [2] However, music illustrations possibly include some 5 (five) to 6 (six) tones preferred by Indonesian children.

5 CONCLUSION
From this research, it is seen that photographic fantasy is created when the child is treated by colorful visual form, and interactive motion that tempts in the novelty of space and experience. Meanwhile, regular rhythms evoke a stable emotional sequence in receiving cognitive materials as the brain is allowed to digest and remember. This, alongside having the same visual identity is the basis for designing the concepts as children are enabled with this technology to express themselves, dismantle the establishment of the same identity stereotype, where Sharks do not have to appear grayish-blue. Furthermore this eliminates the limitations of imaginative creativity VR technology is not a video display with contents that tend not to be dynamic, linear, because visual impediments are stimulated by the existence of references to the interpretation of uncompleted children's work. This means that references influence the process of creation. Learning about natural life through virtual reality equipment uplifted children's visual fantasies, through repeated conduction with pleasant feelings, and the creation of fantastic imaginations. Therefore, a better education is attained, where names, types, ways of moving, ways of life, techniques to colonize, as well as other activities of animals are understood. This technology, however, needs to be developed towards the humanist side, where the moral aspect provides early childhood awareness, on the importance of the survival of living beings. Meanwhile, fishing and poaching emerge, alongside pollution of the marine environment, and sporadic land clearing, as phenomenon that troubles existence.

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