DEVELOPMENT OF ANIMATED CARTOON VISUALS AS AN ENLIGHTENMENT CAMPAIGN TO CURB MALARIA DISEASE IN NIGERIA

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ABSTRACT

This paper articulates the endemicity of Malaria disease in Nigeria. It enunciates the disease mode of transmission and the manifested symptoms in humans. The prevalent of Malaria disease in Nigeria can be attributed to the poor living conditions of a larger population of the citizenry and inadequate accessibility to basic health infrastructure. Human behaviours facilitating the spread of malaria scourge are inclusive and not limited to neglect of sanitary measures, poor routine hospital data collection culture, poverty of the mind, elitist decadence, and creation of breeding places close to residential areas but lack of adequate information. The paper elucidates the importance of animated visuals in communicating information that enlightens the public on the causes and preventive measures necessary to mitigate the spread of malaria disease. Animation displays sequential drawings in quick succession giving an optical illusion of movement. Animated visuals promoting social causes evokes emotionally reactions from the target audience. The study explored the construction hand-drawn illustrative to tell a story in frames. The storyline was developed into storyboards embedded with character archetypes. Thereafter, motion sequence was developed in phases and exported into adobe animate computer package timeline in layers accordingly. Motion tweens connects the keyframes and inbetween frames link the visuals together, giving a sense of implied movement anchored on time. The animated story was rendered and saved in video format, sound was synchronized with the story on a video editing suite. The final rendering was done on the video editing suite.

Keywords: Malaria Enlightenment   Health   Animation Illustration

1.0 INTRODUCTION

Malaria is an endemic life-threatening disease in Nigeria. The disease is typically spread by female anopheles' mosquitoes and transmitted to humans through mosquito bites. The symptoms of malaria are drowsiness, headache, fatigue, nausea, vomiting, muscle pain, loss of appetite and others. Malaria is a foremost cause of illness and deaths and often poverty in sub-Saharan Africa. Every year, an estimated 210 million people are infected with malaria and about 440,000 related deaths are mostly young children in African (Mayo Clinic, 2020). The World Malaria Report of 2020 revealed that Nigeria had the highest number of global malaria cases 27% of global malaria cases) in 2019 and accounted for the highest number of deaths (23% of global malaria deaths) (World Health Organization, 2019). Ameh (2020) posited that Nigeria contributes the greatest proportion of the malaria disease burden with (25% cases) and (19% deaths). There are estimated 33,000 malaria cases per 100,000 people in Nigeria (Health Think, 2020). Globally, between 2000 and 2015, malaria incidence (the rate of new cases) among populations at risk reduced by 37% while malaria death rate fell by 60% among all age groups, and by 65% among children less than 5years (Nigeria Centre for Disease Control, 2016).

Malaria disease is endemic in Nigeria because of the poor living conditions of a larger population of the citizens and inadequate accessibility to basic health infrastructure. The Nigerian Centre for Disease Control 2016 report observed that the intensity of transmission depends on factors related to the parasite, the vector, the human host, and the environment.   Most of Nigerian cities do not have functional drains and quite several Nigerian populations who are impoverish live in squalors which are fertile ground for mosquitoes. Antimalarial drugs are available for purchase in pharmaceutical retail store across Nigeria. Behavioural factors sustaining malaria scourge are inclusive of but not limited to: neglect of sanitary measures, poor routine hospital data collection culture, poverty of the mind, elitist decadence, and mosquito breeding places close to residential areas. Furthermore, there are cases of adulterated drugs and insecticides as well as their miss-use. They are responsible for poor uptake of control interventions, unethical use of mosquito bed nets or non-use.

However, the Nigerian government is intensifying efforts that promote preventive measures especially in the areas of public enlightenment campaigns. According to the President Malaria Society of Nigeria, enlightenment is key in the prevention, control and management of communicable diseases including malaria (Tribune, 2017) Hence, this study developed an animated cartoon visuals to raise awareness on ways of reducing community spread of malaria infection.

1.1 Animation

Animation are sequential drawings that are shown to be moving. The display of sequential drawings in quick succession gives an optical illusion of movement. Sarah (n.d) explained that the human brain retains images for a split-second longer than the images seen by the eyes, resulting in the illusion of movement when numerous images appear in rapid succession.

Animation is an adventurous artistic creation that is expressive and entertaining. The word animate originates from the Latin verb animare, meaning "to make alive or to fill with breath." (Wright, 2006). Historically, animation precedes movie making, Kerh (2018), posited that the invention of animation

predates movie production by half a century. This genre of motion visual was a popular entertainment during the 19th century embrace by households of the industrial age.

Animations are visual flicks created to tell stories via visual constructs in forms of characters which are often memorable and sensationalized in representation. Animation are motion visuals that explore time and movements to tell stories. The intrigues and dialogues of real life are recreated in animation through movement and time, mood and psychology of animated characters are interpreted through the speed of action. The different types of animation are classified based on the mode of production, they are cartoon animation, two-dimensional animation, three-dimensional animation, typography animation, clay animation (Claymation), sand animation and flip book animation. However, the commonest type of animation is the 2-dimensional drawn animation because it is easy to create and appeal to children than others. However, technology is facilitating the development of animation techniques by enabling real-time rendering techniques and automated capabilities. New technologies have reduced the time and cost of production, this has enhanced the creation of animation contents for television viewing and interactive platforms.

Animated images are medium of storytelling that have strong influences on the audience. Stories are an integral aspect of man's socio-cultural civilizations. Evidently, stories and narrations of past events contribute enormously shapes our ideals and behaviours. Sullivan, Schumer and Alexander (2008) buttresses the importance of stories to humans in the following:

"As human beings, we live in story all of the time. Story is as natural and essential to us as breathing. We all have stories to tell but telling our personal stories daily and constructing a story from scratch are two very different things. Usually when we tell stories daily, we are relating events to one or two other people. When constructing story, we are trying to communicate with a mass audience. When we tell stories to a friend it is because it is important to us or to them. We are connected and moved emotionally because it is personal. When we construct story, we are moving not just an individual, but an audience. The goal then becomes to make the personal universal"

However, animation is commonly associated with illusions, fantasy worlds, sensations, adorable characters that entertains. The stories are told through characters that are memorable and relatable to the audience. Archetypes in animation is a consistent and typical version of a thing is defined as a pervasive idea or image that serves as an original model from which copies are made (Sullivan, Schumer and Alexander, 2008). Archetypes reflects the traits, convictions and instincts of characters. They are the building blocks of animated films. Sullivan, Schumer & Alexander (2008) character archetypes in animated stories are classified into the following: The Hero—the character through which the story is told

i. The Mentor—the ally that helps the hero.

ii. The Herald—this character announces the "Call to Adventure" and delivers other important information throughout the story. This role sometimes shifts from character to character.

iii. The Shadow—this is the villain or major protagonist. Sometimes, as in Miyazaki's films,

the shadow resides in the character himself.

iv. The Threshold Guardian—this is a character, passageway, or guardian that the hero must get past to proceed on the quest, or to retrieve the object of the quest. In Shrek, the Threshold Guardian is the dragon that guards Fiona

v. The Trickster—this character is usually the comic relief in the story. He sometimes leads the hero off track or away from then goal.

vi. The Shapeshifter—this character is not who she appears or who she presents herself to be. Some of the directors and animators are using this medium to depict the stark and darker side of reality.

2.0 LITERATURE REVIEW

Animation has been a medium of shaping social system across cultures globally. Social causes are advanced effectively using motion graphics. Basically, animated videos promoting social causes are designed to evoke emotional reactions as explained in Maslow hierarchy of needs (see figure 1).
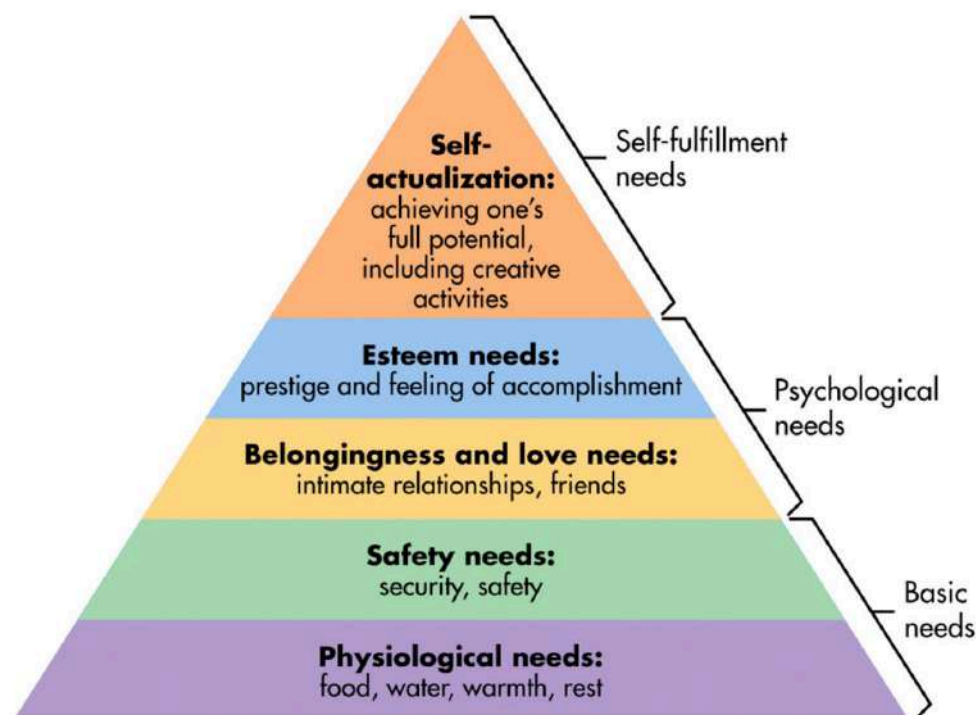
Fig. 1 Maslow Pyramid (Source: Mcleod S. 2017)

In Maslow's hierarchy model the first and lowest stage of needs is characterized by those biological and physiological needs whereas the second stage represents safety needs as provided through stability (Bögenhold, 2009; Mcleod, 2017). The hierarchy of organization stipulate that the needs occupying higher section of the Maslow Pyramid are not the basic requirement for human survival so they can either be postponed or avoided. Information connecting people to their basic needs is highly valued

and acknowledged by the target audience. People are desirous of safety needs, they seek to be assisted in seeing how they can be safe and secure (Huitt, 2007). When environmental information suggests that there is a potential threat to family, loved ones and properties, people experience an emotional response provoking the need for action (Interaction Design Foundation, 2020). Information that addresses and reassures people of their physiological or safety concerns, current issues and future outlooks can be effectively disseminated through animation videos. Typically, visual campaigns promoting social causes easily catches the attention of the targeted audiences.

2.1 Social Enlightenment

Social enlightenment is focused on informing and shaping public minds on social issues affecting their daily lives. Social enlightenment emphasizes thoughts and reasoning and understanding that improves human living condition, it also provides the platform for social reforms. Enlightenment produced the first modern secularized theories of psychology and ethics (James, n.d). Bornstein (2012) posited that enlightenment represent an epoch period in history when fanciful thinking was replaced with a better rational understanding of cause and effect. Imperatively, modern science products of social enlightenment. Immanuel Kant's well-known pronouncement (1959b), "Sapere aude! (Dare to know!) Have the courage to use your own reason! – that is the motto of enlightenment" (Torpey, 2018) was the precursor to the European intellectual movement. Enlightenment is referred to the self-proclaimed title of a philosophical and social movement that emanated mostly from France and England during the 18th c (James, n.d). Indeed, the era of enlightenment represented a clear departure from hermeneutics authoritarian reasoning foist by the doctrinally authoritarian Catholic Church. The influences of enlightenment from its inception as an emancipatory political tool which has continuously sustain the idea till now. Immanuel Kant emphasize that the fundamentals of achieving political freedom is clear and independent reasoning. Enlightenment movement was pronounced during the period of "Glorious Revolution" in England and French revolution which inspired the Scientific Revolution. The scientific discoveries enabled in-depth understanding of nature and the human intellect. Intellectual enlightenment forms the bedrock of social sciences. Weber (1949) posited that social science is an "empirical science of concrete reality" and that definition continuously shaped the nature of the modern social scientific disciplines, and others that are profoundly different from the natural sciences.

Enlightenment thinkers shouldered the responsibility of advocating issues that affects the people. These issues ranged from colonialism, slavery, political subjugation, safety, health and others. Contemporarily, enlightenment has become a reflection of new understandings influencing social order which engenders positive and measurable results advancing the importance of a robust society. Bornstein (2012) noted that enlightenment programs are specifically designed to address social problems, knowing that humans are mostly triggered by irrational concerns to satisfy their craven pleasure. Thomas Hobbes portrayed humans as moved solely by considerations of their pain and pleasure (Laskar, 2013). Disease prevention is often anchored on social enlightenment to communicate lifesaving information to the public. Health sensitizations are critical in controlling malarial infection, prevention, and eradication. Enlightenment campaign messages on malaria are targeted at people irrespective of their diverse cultural background. Targeted enlightenment efforts enhance public understanding of malaria, compliance to

apt diagnosis, standard treatment, and preventive actions (Adefioye, Adeyeba, Hassan, and Oyeniran, 2007).

Historically, visual communication has been utilized in warning and sensitizing the public on healthcare issues. Visual illustration permeates the human mental filters irrespective of literacy rate. Hammond (2009) noted that pictorial warnings are essential in communicating health information to populations with lower literacy rates. Animated visuals effective approach for determining individuals' perceptions and instruction on social unity and solidarity, fellowship, and social relations (Yüksel and Adigüzel, 2012). The illustrated stories in cartoons are often aimed at promoting public awareness and social enlightenment. Visual constructs are critical in shaping mindsets and perception to improve human live and living. Kabapinar (2009) suggested that concept cartoons can be beneficial in informal learning setting to promote public awareness, as they found out that their displayed concept cartoon in the London undergrounds were eye catching means of promoting thinking and discussion. In contemporary times, the society is bombarded with visually intensive exciting imagery both still and motion pictures. Visual literacy entrenches a language system that elicit the subconscious social construct of meanings to visual information. The multiple streams of visuals from diverse media channels can shape the mind though communication of safety information mediating the receptive senses. Visual imagery influences the global culture through the mass media which is a vehicle of communication across the world. Motion visuals are deployed by creative industries especially in advertising as a tool of persuasion. Visually driven enlightenment campaign on malaria targets people of diverse backgrounds irrespective of their literacy level and experiences. Animation visuals communicate effective information that improves understanding of malaria disease, to facilitate compliance to appropriate diagnosis, treatments, and preventive actions against malaria.

2.2 Storytelling

Storytelling is integral aspect of African traditional societies. Apparently, every culture has its stories, which are told to inform, educate, entertain to preserve and the cultural values of this societies. Storytelling is the interactive art of using words and actions to reveal the elements and images of a story while encouraging the listeners imagination (National Storytelling Network). Parsi (2019) describe storytelling as sociocultural of sharing stories, often with improvisation, theatrics, or embellishment. Stories are told through diverse media orally or visually. Visual media represent an effective means of telling stories. The ancient cave painting of Paleolithic era depicts the efforts of early humans in giving meaning to their surroundings through communication. The hieroglyphs of ancient Egypt communicated information and told complex and engaging stories composed of pictographic symbols representing sounds and characters (Maters Class, 2021). When stories are infused with real-world experience, they are relatable and engaging. Such stories provide valuable knowledge that equip the audience with information that can remedied different circumstantial situations confronting them. The fundamental components of stories and storytelling are plot, characters and the narrative point of view. Parsi (2019) explained that the Greek Philosopher Aristotle formulated the fundamental components critical in creating a compelling narrative. The fundamental components are as follows:

Wants and Needs

The first component of a good story is creating the plotline, and this defines the wants or needs of the character. This varies according to story, and often these things are intangible. For instance, in a movie centered on prisoners, these prisoners aren't generally going to want to find the fountain of youth. More than likely, they want freedom. But, in other cases, it could be another person. In romantic comedies, one person may be trying to win the love of another. In a murder mystery, a character may want to kill an enemy. Writers of animation stories determine what their character really wants or needs in the stories.

Challenges

The common challenges are highlighted in the story structure with the goal of surmounting challenges at the end of the story. When characters get what they want easily, it would make the movie short and uninteresting. Conflict is what hinders a character from actualizing his want or need. Conflict can be from external sources such as weather, other characters or even internal issues. Good stories need some type of conflict. Conflict is what the protagonist, or the hero and/or heroine, must overcome to reach their goal. The conflict will generally take up most of a screenplay since it's at the center of the drama. For instance, the conflict in the Hangover, was how the groomsmen lose the groom on the day of his wedding. The comedy film is based on the groomsmen try to find the groom before the wedding starts. The goals, dreams and desires of the characters help the audience to connect with the story.

Conquer

Conquer is when the characters are able overcome the challenge. The audience given the feeling that a positive outcome is possible. As the story unfolds, the audience are taken on a journey from "close to giving up" all the way through to the results, feelings or praises achieved by characters. The viewers empathize with the characters and having the feeling that the answer to the characters problems is in their hands. At this stage of your story, the reader is so emotionally bought into your character's journey. They visualize themselves conquering their problems and achieving their goals.

Conclude

Stories can either end with a positive (happy) ending or sad ending. However, most movies do have positive ending that enhances the mood of the audience. Stories normally convey messages which are aimed at educating the audience. The audience should be inspired or convinced at the end of the story. Stories dwelling on social enlightenment and advocacy are crafted to nudge the target audience into embracing certain acts and behaviours capable of improving the quality of life. New forms of media are creating new ways for people to record, express and consume stories (Birch, Carol and Mellisa, 1996)

2.3 Colours in Animation

Colours are fundamental in the development of animation stories. Colours are essential in conveying emotion, identification of characters and determination of the location ambience. Stories can be told with colour expressions, the mood of a scene are redefined with colours. The appropriate usage of colours can direct the eyes of the viewers. Baianat (2020) explained that Pixar Animation company introduced the concept of colour scripts to create colour scheme, lightening, emotion and moods in animation films. Colour Script is based on colour theory and colour psychology. Colour schemes in

animation movies provide psychological assists and appeals to the viewers subconsciousness. Sullivan, Schumer & Alexander (2008) enunciate the psychological interpretation of colours in the following: Colors are used to create emotion through visceral, psychological, or cultural associations. For example, green is associated with nature, growth, and rebirth. But it can also mean lack of experience, good luck, greed, envy, jealousy, or sickness. How can one color generate such a range of possibilities? The range of emotion often has to do with the value or saturation of the color. Yellow-green represent sickness. Dark green is the color of ambition. Pure green connotes healing, safety, and nature. Colors have finite emotional associations. Reds and yellows are warm. Greens and blues are cool. Grays are neutral. Good design requires the understanding of the different range of emotion that a color can create when

3.0 METHODOLOGY

The research methodology adopted by this paper is product development. The methodology is categorized into the stages of pre-production, production and post-production.

3.1 Pre-production

The pre-production process involves the development of storyline and storyboards for the animation video. The storyline guides the visual narratives in the animation story. This study anchored the animation storylines on needs/wants, challenge, conquer and conclude. Drawings depicting the sequential acts in each of the scenes were done manually in frames. The drawings were coloured accordingly. The following is the storyline of the developed animation and the accompanied drawings:

Needs and Wants (Causes)

Act 1 Scene 1: A close-up shot of the individual getting close to an open dumpsite close to residential buildings

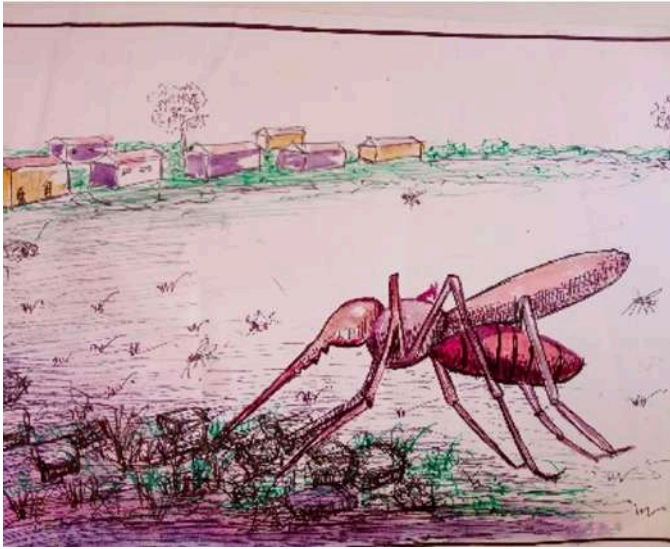Act II Scene I: An individual going to dispose a basket of refuse

Act lII Scene l: Dumping of refuse on the open dumpsite

Act IV Scene l: Close up shot of refuse being disposed in an open field

Woman disposing refuse on the site

Challenges (Effects)

Act I Scene II: A mosquito feasting on the dumpsite

Act II Scene II: The Mosquito perching on the human skin

Act III Scene II: A grown up man sleeping in his room

Act IV Scene II: A mother cuddling her sickly child.

Act V Scene II: The mother taking her sick child to the clinic.

Act VI Scene II: Doctor attending to the mother and child.

Act VII Scene II: Mother consulting the doctor.

Act VIII Scene II: Mother and the child.

Act IX Scene II: A cross section of the clinic ward with malaria patient

Act X Scene II: Malaria patient on blood transfusion

Conquer (Control)

Act I Scene III: Sanitary officers on their way to meet the people

Act II Scene III: Back view of sanitary officers

Act III Scene III: Sanitary Officers advising people to clear the open dumpsite which is the breeding ground for mosquitoes.

Act IV Scene III: Continuation of the social enlightenment

Act V Scene III: Clearing and weeding of the dumpsite

Act VI Scene III: Clearing of the dumpsite

Act VII Scene III: Clearing of the dumpsite

Conclusion (Healthy Living)

Act I Scene IV: People engaging sporting activities
because they are healthy

Act II Scene IV: People engaging healthy activities
because they are healthy

Act lII Scene IV: Textual Sensitization information

3.2 Production

Frames were scanned and imported into Photoshop application on the system for digital enhancements. The frames were saved in jpeg format and exported into Adobe Animate software. Adobe Animate is an interactive multimedia program developed by Adobe International. The frames were exported accordingly into a single timeline for seamless transitions. Motion tweens connects the keyframes and inbetween frames link the visuals together, giving a sense of implied movement anchored on time. Soundtrack was also integrated into the sound timeline on the adobe animate software.
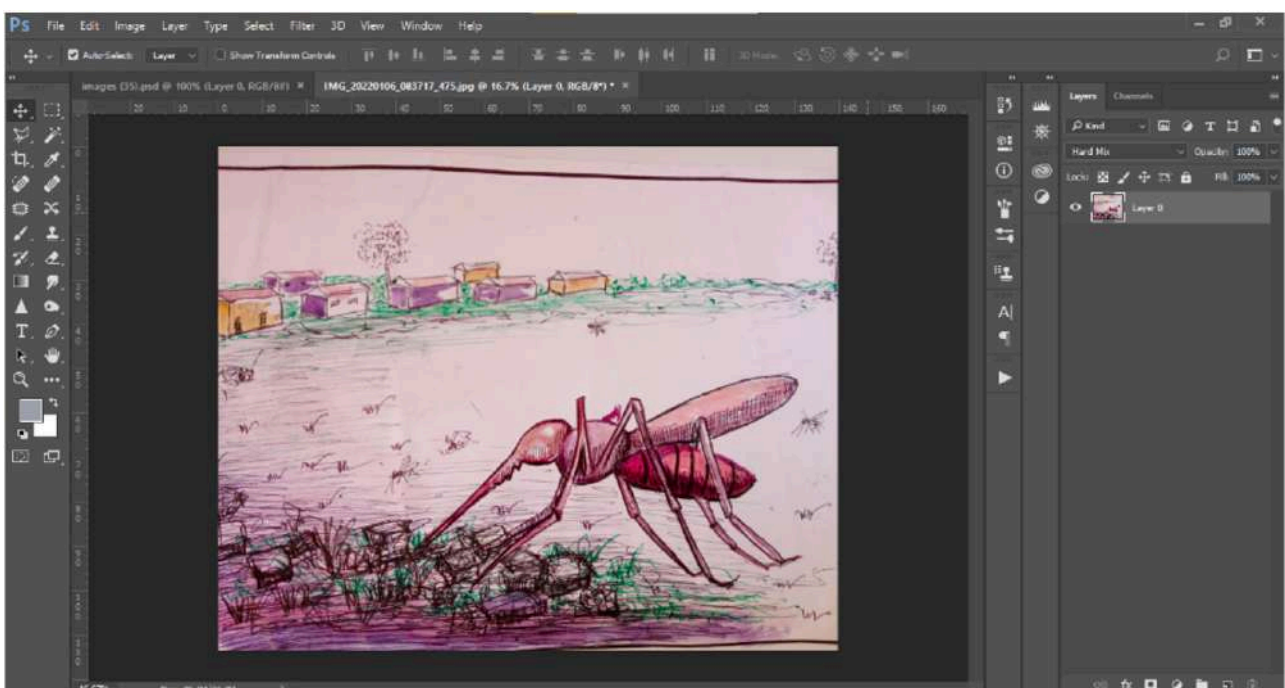

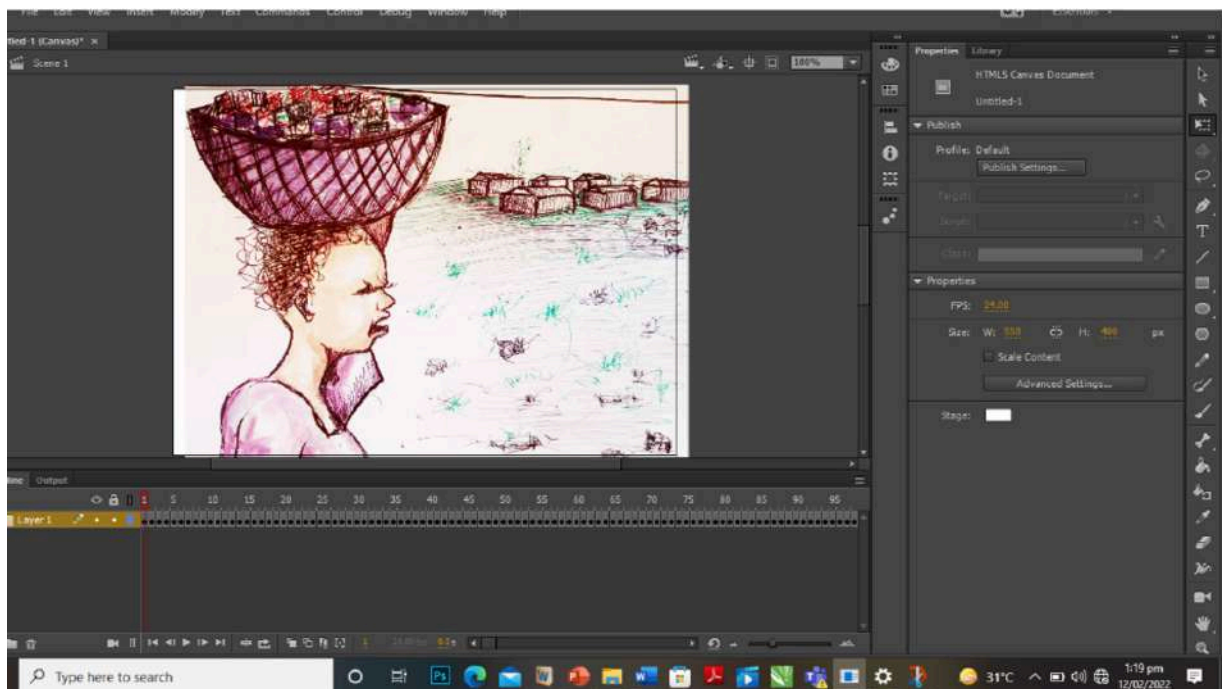Plate 1. Digital enhancement of drawn images on Photoshop

Plate 10: Creation of motion tweens on Adobe Animate

3.3 Postproduction

The animated drawings were rendered alongside the soundtrack and exported into a quick time file format file that is compatible with most video platforms for seamless viewing.

4.0 DISCUSSIONS

4.1 Wants and Needs (Causes)

Human activities that provide fertile breeding spaces for mosquitoes are espoused in this section. Indiscriminate disposal of refuse, poor sanitation and nonfunctional drainage system enable the easy spread of malaria disease. Conscious efforts should be made towards reducing contact between human and mosquitoes. Ademowo (2021) noted that it is important for people to dispose broken pots and bottles, fix potholes on the roads and keep gutters clean. Therefore, the drawings representing the different acts in scene I showcases the human activities that enhances the spread of malaria.

4.2 Challenges (Effects/Treatment)

The drawings in scene II focuses on enunciating the process of malaria transmission from when the carrier agent (mosquito) breeds on the open dumping site and infect humans with the malaria virus by perching on the human skin. Symptoms of malaria ranging from drowsiness, feverish feelings and others are shown in the different acts. Standard treatment for malaria anchored on accessibility to basic responsive healthcare system is emphasized in this scene.

4.3 Conquer (Control)

The people were encouraged to take charge of their environment. Sanitary officers enlighten the populace on the dangers of having an open dumping site within the community. The people made

conscientious efforts to sanitize their environment. The open dumpsite was cleared and weeded to reduce malaria breeding habours. This is a form of controlling and curtailing the spread of malaria.

4.4 Conclusion (Healthy Living)

The acts in this scene indicate that when people are free of disease and other ailments, they can partake efficiently in daily routines. Healthy lifestyle is dependent on healthy living

5.0 CONCLUSION

Prevention and control of malaria can be achieved by raising public awareness on the causes and effects of malaria disease in Nigeria. It is necessary to scale up the adopted preventive measures by emphasizing more on social enlightenment campaign. Health sensitizations are important in controlling malarial infection, prevention, and eradication. Visual sensitization focusing on basic physiological needs are prioritize for attention by people. Apparently, visuals can easily appeal to the subconscious mind of the target audience. Animated cartoon visuals are effective in communicating lifesaving information. Animated stories are memorable and appeals to the interest of the target audience. However, it is necessary for the health regulatory authorities in Nigeria to focus more on exploring the use of illustrated motion visuals in the public sensitization campaigns. Illustrated visuals are simple and expressive.

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