REVIEW

Utilization of Doodly for designing effectively engaging environmental education multimedia packages in the Covid-19 era

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Man's industrial, agricultural, and economic activities, as well as some natural factors, have both direct and indirect negative effects on the environment, resulting in very unpleasant environmental reactions. Blizzards, tornadoes, wildfires, solar flares, floods, tsunamis, earthquakes, volcanic eruptions, ozone depletion, and other natural disasters have become common occurrences around the world. Worrying is the uncontrollable rise in human population, which is accompanied by an increase in the rate of environmental exploitation. Environmental Education, among other technologies and innovations, has been proposed to provide replicable solutions to pressing environmental concerns, which necessitate an understanding of their causes and effects, as well as the cooperation of all. The sensitivity and necessity of Environmental Education in the Covid-19 era, particularly as it relates to safe and sustainable human-environment relationships, necessitate the use of effective, vibrant, and very captivating tools in designing and conveying its message, in order to capture and sustain the target audience's attention while the intended message is communicated. With reference to the above background, this paper explored the utilization of Doodly software for designing engaging multimedia packages for effective environmental education in the covid-19 era by considering related literatures to effectively achieve the outlined objectives.

Keywords: Utilization, Doodly, designing, effectively engaging, environmental education, multimedia packages, covid-19 era.

INTRODUCTION

The environment is presently plagued by a lot of issues resulting from both natural and man-made factors, which have accumulated over time. The industrial, agricultural, and economic activities of man in addition to the interaction of nature tend to have both direct and indirect negative impacts on the environment, which result in very unpleasant environmental reactions. According to Ng'ang'a (2014), the human quest for development has driven man into taking several actions that have culminated in the increasing manifestation of environmental problems such as food shortage, deforestation, pollution, erosion, ozone layer depletion, desert encroachment, etc. The sporadic

exploration of nature by man to satisfy his insatiable appetite for development has greatly harmed the ecosystem and altered the overall stability and order of nature, leaving the environment in a permanent state of fragility and helplessness.

Environmental issues like blizzards, tornadoes, wildfires, solar flares, floods, tsunamis, earthquakes, volcanic eruptions, ozone depletion, landslides, sinkholes, air bursts, limnic eruptions, hurricanes, hailstorms, ice storms, cold waves, heat waves, drought, thunderstorms, and the likes, have become regular global occurrences. More worrisome is the uncontrollable rise in the human population which

results in a corresponding increase in the rate at which the environment is being exploited. While it is agreeable that man must live on the environmental proceeds, necessity places a conscious call for caution and sustainability, if the environment must remain a safe place for all concerned.

To proffer replicable solutions to the pressing environmental concerns, which demand the understanding of their causes and effects, as well as the cooperation of all, scholars across the globe and over time have suggested many technologies and innovations, one of which is Environmental Education. Whether offered formally, informally or non-formally, Environmental Education has been seen as an instructional procedure that permits individuals to discover environmental matters, involve in problem-solving, and take actions to advance the environment (United States Environmental Protection Agency, 2021). The information made available via Environmental Education inculcates in individuals, a better understanding of environmental issues, their causes, and preventive measures.

Before the coming of Corona Virus 19 (Covid-19) which emerged as a novel pandemic virus with highly contagious and very dangerous health implications, several mediums have been adopted in carrying out Environmental Education, most of which were majorly face-to-face, with very minimal use of print and electronic media. With the necessity of significantly reducing the rate of physical meetings, education, especially in third world countries, has been seriously affected, and Environmental Education has not been left out. Even before the COVID-19 pandemic, the educational system, the world over, has always desperately yearned for an effective migration from the analog style of instructional delivery, to the digital style (Johnson et al., 2021b). The sensitivity and necessity of Environmental Education in the Covid-19 era, especially as having to do with safe human-environment relationship, call for the adoption of effective, vibrant and very captivating tools in designing and conveying its message, to the end that the target audience would have their attention captured and sustained while the intended message is communicated.

Information and Communication Technology (ICT) tools have been defined as those hardware and software applications that help to easily generate, create, store, retrieve, and disseminate information, from the sender to the receiver. Presently, ICT has made available some specialized tools that, when used effectively, can support and extend learning in increase educational possibilities for the learners. The use of technology for instructional delivery has over the years received considerable favourable scholarly debates, with both theoretical and empirical evidences for back up such arguments (Johnson et al., 2021). In the field of Environmental Education, ICT tools like Virtual Museum, e-Junior, Google Earth, Virtual Ecological Pond, River City, Under Control, Virtual Field Trip, Acid Ocean Virtual Lab, among others are available for instructional use. However, Fauville et al. (2014) lament that Environmental Education teachers often lack the technical support and computer skills to address issues that

arise when using ICT tools to teach; there is a lack of research examining how different ICT tools can be used and what they imply for students' learning; and, the alienation of students from nature, instead of promoting a sense of connection. This work seeks to adopt an ICT tool, and explain its functionality in Environmental Education instructional delivery, bearing in mind such concerns raised above.

Doodly is a simplified audio-visual/animation design software that comes in handy to aid in designing engaging multimedia packages for effective environmental education instructional contents' delivery in the Covid-19 era. This is most especially useful because Doodly designs can be shared via mobile applications and received on internet-enabled mobile devices, as well as every audio-visual media. Regarding the above background, this paper seeks to achieve the goal of exploring the utilization of Doodly software for designing engaging multimedia packages for effective environmental education in the covid-19 era, by reviewing related works to achieve the following objectives/sub-headings:

- i. Concept of Environmental Education.
- ii. The rationale for Environmental Education.
- iii. Challenges associated with carrying out Environmental Education in the Covid-19 era.
- iv. Concept of Doodly
- v. Features of Doodly; and,
- vi. Procedure for effective utilization of Doodly in designing Environmental Education multimedia instructional packages.

Concept of Environmental Education

The concept of environmental education has been variously discussed across social science and humanities literature. Conferring to United States Environmental Protection Agency (2021) environmental education is a procedure that permits people to travel environmental problems, participating in problem-solving and take action to reclaim the environment. UNESCO (2014) sees environmental education as the prepared plan to explain how normal environment functions, and principally, how humans can manage behaviour and ecosystems to animate sustainably. It further adds that environmental education is the knowledge procedure that raises people's familiarity and awareness around the environment and related encounters, develops the essential know-how to report the challenge and nurtures their attitudes, motivations, and assurances to make conversant choices and take accountable actions.

To Kalindi (2014) environmental education is an instructional channel that enable people to advance their awareness about their environment and obtain requisite acquaintance, skills, values, practices, and the resolve, that allow them act-individually and cooperatively to resolve current and upcoming problems of the environment. Hus (2011), indicates that Environmental Education helps to close up the gap between man and nature, thereby reducing the magnitude of exploitation of nature by man and the

attendant effects. Environmental education helps people to grow empathy for environmental problems and have the ability to take responsible and well-informed choices. It can be said to imply education about the environment offered within the school system, from primary to secondary and tertiary.

In its informal and non-formal usage, it comprises all hard work to teach the people and other learners via printed materials, websites media crusades, as well as natural sites like aquariums, zoos, parks, and nature centres (Kalindi, 2014). While being majorly offered across all levels of formal education as single-subject approach, interdisciplinary approach, multi-disciplinary approach, and holistic approach; it is also offered informally and non-formally to those who cannot afford the formal education. This innovation is considered very important because everyone needs the right proportion of knowledge about how to cautiously and sustainably relate with the environment, and where this knowledge is either lacking or inadequate, environmental issues abound.

The Rationale for Environmental Education

A number of factors necessitated the introduction of the innovation called Environmental Education. As contained in the United Nations Charter of 1975 (UNESCO, 1977), arrived at in Belgrade, Yugoslavia, the basic rationale for Environmental Education would be to:

- a. Develop a world population that is conscious of and concerned about the environment and its allied issues, and which has the information, skills, attitude, motivation and commitment to work independently and together to find answers to present glitches and forestall incoming ones.
- b. Help individual and communal clusters obtain a basic understanding of the entire environment, its associated challenges and humankind's critical responsibilities, occurrence and roles in it (knowledge).
- c. Help individual and social groups obtain an awareness of and sensitivity to the total environment and its allied problems (awareness creation).
- d. Help individual and social groups obtain social standards, robust feeling of anxiety for the environment and motivation for vigorously active in its defence and development (attitude).
- e. Assist persons and social groups obtain the skills for resolving environmental issues and fostering dialogue between groups (skill).
- f. Assist persons and social groups grow a wisdom of accountability and urgency concerning environmental issues to safeguard suitable actions to resolve those snags (participation).
- g. Support persons and social groups assess environmental measures and education agendas in terms of ecological, political, economic, social, aesthetic and educational features (evaluation).

Additionally, Duncan (2020) points out that Environmental Education is beneficial to the students,

teachers, government, the environment, and the society at large, in the following ways:

- a. *Promotes healthy lifestyle*: Learning about nature is both beneficial to the learner and nature itself as individual get to learn to up rightly with nature and benefit sustainably.
- b. *Instils respect for nature*: It allows people to comprehend why it essential to revert nature and gain the profits and sensations that nature offers.
- c. *Teaches about environmental issues*: It provides information around some of the relevant issues that touches the environment. It permits the learner to be fully aware while making personal efforts to assist in healing the environment.
- d. *Helps man to be kind to nature*: It teaches people the need to be kind to nature, plants audients and fellow humans.
- e. *Allows the development of critical thinking*: Its deliberations and experiences enable the learners to make an examination and assessment of the situations disturbing the environment. These serves as a prompter to them in making knowledgeable verdict and choices based on their evaluation of situations in relative to the environment.
- f. *Teaches learners a sense of responsibility*: It proves to the learners, the benefits of being accountable human beings, both individually and collectively.
- g. *Assists government meet its objectives*: It makes for communal participation in ecological preservation activities which results in an extra unified society that is anchored in inclusiveness. It makes individuals play different roles on assisting the government to achieve a tolerance, discipline, and healthier environment.

Notwithstanding the derivable benefits associated with Environmental Education, the overall success thereof cannot be ultimately effective if the associated challenges are not overcome.

Challenges Associated with Carrying out Environmental Education in the Covid-19 Era

Many challenges tend to hinder the effectiveness of Environmental Education and the overall achievement of goals and objectives thereof. In its very formal sense, Ng'ang'a (2014) outlines such challenges to comprise fragmentation of Environmental Education themes in the numerous topics, insufficient instructional materials, insufficient preparation for educators who teaches Environmental Education associated themes in their subject fields, over dependence on the traditional teaching method amid many. In a general sense, Environmental Education has the following challenges:

- a. *Shortage of Man-Power* - The dynamic and multi-dimensional aspect associated with the course would not only mandate variations in instructors' training packages, but also the present scarcity of skilled instructors to teach the subject is another major issue to effective deployment of the programme as well as its efficiency.
- b. *Over-population* - To drive environmental

education in the face of high human population. The implication is that the limited human and material resources available for driving Environmental education are grossly insufficient in the face of the population reality.

c. The Necessary environmental requirement for Survival – Man necessarily needs to farm, mine, hunt, fish, and lumber to meet his needs. Most people who engage in such ventures exploit those resources to extinction, especially for lack of information on sustainability.

d. Poor level of environmental awareness – Notably, most environmental users are majorly unaware of the dangers associated with extreme exploitation of the environment. This is more so because there is no known approach that can create environmental education awareness across the places at the same level.

e. Poverty – A lot of people desperately exploit environmental resources as their only means of survival due to the high level of poverty, principally in developing countries. This makes the exploitation of the environment both uncontrollable and endless; especially in the face of very limited environmental education (Lay, 2011).

f. Insufficient resources – Due to the high population and low resources available for environmental education, it has been impossible to drive environmental education to the desired targets, especially in interior rural areas.

g. Corruption and unseriousness of resource persons – Many resource persons working on environmental education are very corrupt. This explains why they embezzle monies meant for materials and logistics and end up presenting mutilated figures during evaluation, which makes falsehood of evaluation efforts and the entire environmental education exercise.

h. Insufficient time – Many people who exploit the environment tend to be too busy to have time to be educated, so any environmental education effort becomes futile, especially when such efforts are formal or uninteresting.

Concept of Doodly

Doodly is a software package used in designing and producing captivating motion pictures or animations for any desired purpose. Woofresh (2021) sees Doodly as a whiteboard animation software with a drag-and-drop interface for creating sketches using thousands of custom-drawn images from its library. According to Stranger Show (2020) Doodly is a computer application software used in creating whiteboard, blackboard, greenboard or glass board animation videos. She further explains that Doodly helps to create explainer videos with their pre-defined templates. AP News (2021) defines Doodly as a whiteboard animation software that allows anybody, irrespective of technical or project skills to design professional, effective, and genuine animation videos in actions.

Doodly, is a whiteboard, greenboard, blackboard or glass board animation software that allows the user, notwithstanding the technical or design skills to create effective and efficient audio-visuals within a short time

frame. Idayi (2021) sees Doodly as a novel software, designed to allow the user import and use images in the design of captivating audio-visuals. He adds that it can be used to draw very engaging animations that can capture and sustain the interest of the viewer. Accordingly, Doodly allows the designer the liberty to make whiteboard, blackboard, greenboard or glass board animation videos without the need for complicated software tools and processes.

According to Cloud (2019) Doodly is gotten from the word "doodle" which was first used in the early 17th century to mean "simpleton" as derived after the German "dudeldop" which means "to swindle". In recent times, doodling has been utilized as a stress releasing method used to alleviate mental stress. It is presently fused into the art therapy, permitting its operators to slow down, focus and de-stress. This concept was adopted and utilized in the production of Doodly software to imply the use of its captivating and compelling effect for capturing attention and comprehension (Stranger Show, 2020).

Doodly engages cartoon, graphics, visuals, audios, sceneries, characters, props, and the likes to produce compelling animation videos. By doodling, an individual is utilizing neurological pathways in ways that permit for realistic and effective sifting, processing, and retention of materials (AP News, 2021). Once an individual views a handlike pencil drawing the initial letter of a word, before the second, the brain logically attempts to depict what the term would be. Similar process playout in drawing of scenes, props and characters, and creates motivation for viewers to stay captivated (Cartoon Media, 2021). It has been used as a robust, easy to use and powerful animation design tool. Doodly can be used to create pictorial representations of materials, allowing for a better appreciation of materials being learned.

Features of Doodly

There are numerous benefits associated with the instructional use of Doodly software. Stranger Show (2021) notes that the software scores high on features like; vast array of custom images, royalty-free background music for any tone and mood, ease of editing, ease of customizable export and share, user friendliness, availability of varieties of canvases, varieties of culturally represented hands, ability to import personal image and audio files to the timeline, and ability to record personally customized audio. Additionally, Cloud (2019), Woofresh (2021) and AP News (2021) point out the following additional features of Doodly:

a. The software makes available hundreds of images in addition to allowing users upload and use personal images along with Doodly fast drawing technique, to make point-and-click custom draw paths, letting the drawing of any image selected.

b. One off payment and acquisition allows for installation on multiple systems without any additional payment.

It does not require and special proficiency in computer or animation. Just anyone with basic knowledge of computer usage can make good designs.

c. It allows the user to personally customize a voice-over audio right inside Doodly software and sync same to the timeline draft with just an easy click.

d. Using of other user generated audio in making the design is also made possible in addition to a large library of royalty-free background audio tracks suitable for any mood or genre.

e. It makes available male and female hands of different sizes and ethnicities to allow for a culture bound audio-visual design (Woofresh, 2021). All that a designer needs can be easily manipulated without any cumbersome procedures.

f. It allows the user to design the intended audio-visual package and export same in several Mp4 file sizes, from web-ready to full 1080p high definition, for online and classroom usage.

g. It can be shared on Social Media platforms as well as broadcast on television.

h. Its designs can apply to those living with visual or auditory disabilities.

i. It could be used on both normal and Mac systems.

Procedure for effective utilization of Doodly in designing Environmental Education multimedia instructional packages.

For an effective design of an instructional package on Environmental Education using Doodly software, the following step-by-step procedure must be systematically adhered to:

a. *Acquire the Software* – The Doodly software is available at doodly.com and can be acquired for any system as it is compatible with Mac and normal computer systems. The basic package goes for an affordable fee that is flexible enough for various users.

b. *Produce a storyboard* – Doodly instructional package requires scripted storyboard on a given topic of interest. The designer must prepare a detailed storyboard to provide a roadmap for the design. The storyboard, before being taken for the actual design, should be vetted by environmental education and related professionals, to ensure its effectiveness and efficiency.

c. *Launch the software on the computer system* – The designer, after preparing and editing the storyboard, should launch the Doodly software on his computer system to prepare the design on the Doodly timeline.

d. *Record an Audio* – The designer should record a voice note using the Doodly audio recorder, playback and edit same to ensure perfection. Where there is an already existing audio for use, the designer should import it to the timeline and set it on the audio bar.

e. *Type and select the appropriate texts, graphics, pictures, props and Characters* – Upon perfecting the audio and laying same on the timeline, the designer should carefully match the spoken words with appropriate texts,

graphics, pictures, props and characters.

f. *Select a background theme music (if necessary)* – The function of theme music is to drive home the mood of a given presentation. Where necessary, Doodly has a library of royalty-free background music to choose from. The designer should carefully select, bring to the second audio bar on the timeline, adjust it and make sure it does not interfere of compete with the main audio.

g. *Choose an animated drawing hand* – Doodly has several customized hands that depict different cultures, and a designer must select one as appropriate for his target audience. The animated drawing hand serves to write and draw appropriate images as arranged on the visual bar of the Doodly timeline.

h. *Preview the final design* – The final design will be previewed, possibly, with media and environmental experts and possible corrections should be made to ensure appropriateness and viability of content to achieve the intended goals and objectives.

i. *Export the final output* – The final previewed design should be exported on 1080p MP4 format and made ready for onward sharing via mobile devices or television.

j. *Share to the target audience* – Using mobile application and with the help of the internet, the final output can be shared with the target audience. The use of television service can also be employed to convey the designed package to the intended audience.

k. *Monitor and Evaluate* – Make use of appropriate pre-planned monitoring and evaluation strategy to ascertain the extent of success or otherwise of the entire exercise, over a given time and place.

Conclusion

The sensitivity and necessities of Environmental Education in the Covid-19 era, especially as having to do with safe human-environment relationship, vis-à-vis the conflicting issues that tend to hamper its success, necessitate the adoption of effective, vibrant and very captivating tools in designing and conveying its message, to the end that the target audience would have their attention captured and sustained while the intended message is communicated. This work has been advanced to satisfy the following objectives: define the concept of Environmental Education; outline the rationale for Environmental Education and the challenges associated with carrying out Environmental Education in the Covid-19 era; define the concept of Doodly; point out the features of Doodly; and, prescribe the procedure for effective utilization of Doodly in designing Environmental Education multimedia instructional packages. Having identified and substantiated Doodly as a potent tool for designing environmental education multimedia instructional packages, which could be shared on social media and accessed via mobile devices, as well as broadcast on television, using related literature. This paper will serve as a guide to ensuring the effectiveness of such instructional exercise, if the laid down procedures are adhered to.

Conflict of interests

authors declare that there is no conflict of interests regarding the publication of this manuscript.

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