

Adopting Electronic Instructional Strategies as an Alternative Mode of Education Delivery in Nigeria

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Abstract: While there is a significant rise in electronic learning (e-learning) adoption and digital accessibility across Africa recently due to new normal COVID as it was the situation before now. Nigeria still suffers from acute digital and electronic poverty that continues to exacerbate educational inequalities. The continual challenges facing the traditional teaching strategies and teacher education such like insecurity and pandemic as currently been witness in Nigeria and worldwide demanded the use of alternative teaching strategies to enhance teaching and learning. Hence, adopting electronic teaching and learning strategies will promote equal access to learning as well as promoting digital equity among the citizens. This write up x-rays this concept of e-learning and digital equality with specific descriptions of various e-learning strategies, tools and resources that will promote effective teaching and learning in the country. It was recommended that all stakeholders should do all things possible to evoke e-learning and digital literacy to the teaching and learning process in the country for effectiveness and continuity of education irrespective of natural or man-made challenges.

Keywords: e-learning, instructional strategies, digital equity, teacher education

I. INTRODUCTION

Teachers and learners in schools across Nigeria have faced sweeping and unprecedented changes to teaching and learning because of the continuous insecurity and pandemic challenges which resulted at a point in time school closure. While teachers in developed world shifted quickly to e-learning strategies to make teaching and learning on course, less can be said of such innovation in Nigeria.

Few of the teachers in urban environment in Nigeria shifts to accept these realities hence, access to technologies and devices for students, teachers; competences in e-learning instructions and lack of knowledge about digital education strategies prevented several teachers and students from adopting the delivery of instructions and ensuring educational access for millions of students prevented from accessing formal education due to the lockdown aftermath of the pandemic. This development has prompted the need to build momentum around leveraging e-learning and offline digital learning channels to provide flexible and emergency education using technology. (Greg Sherman 2006). Digital literacy' can be traced to two terms which are computer literacy and information literacy. Computer literacy was supposed to indicate a person's ability to use computer

software proficiently, while information literacy included other skills such as evaluation and appreciation of information (Bawden 2008).

Fieldhouse and Nicholas (2008) noted that digital literacy requires individuals to have critical thinking skills which would help them determine how credible information is. It would also help them to contextualize, analyze, and synthesize any information found online. According to the study conducted by ARENi (2021) access to digital tools such as phone, laptop, desktop, internet, radio and television of Nigeria teachers prior the pandemic showed positively to phone, internet, radio and television but very low to laptop and desktop, however, online teaching and learning was at its low ebb at same period. Technology enhances learning and to maximize learning within our environment demands a high quality course design that can offer students the options of time, place, and pace that characterized different learning style. From the perspectives of Spires, Bartlett, Quick and Garry (2012), digital literacy refers to a wide-range set of practices which ultimately allow students to create, share, and understand meaning and knowledge in an increasingly digital age. United States Department of Education, (2015) defined digital literacy as the skills associated with using technology to enable users to find, evaluate, organize, create, and communicate information and the ability to use those skills to solve problems in technology-rich environments (Leu, Kinzer, Coiro, Castek, & Henry, 2013).

Teacher Education is the process which nurtures prospective teachers and updates qualified teachers' knowledge and skills in the form of continuous professional development Nakpodia and Urien (2011). In a Similar vein, Ogunyinka et al (2015) opines that Teacher Education refers to the professional education of teachers towards attainment of attitudes, skills and knowledge considered desirable so as to make them efficient and effective in their work, in accordance with the need of a given society at any point in time. It includes training and or education occurring before commencement of service (pre-service) and during service (in-service or on-the-job). It therefore becomes clear, that a digital literate Teacher Educator would be better positioned to teach students, achieve career goals, and get the best from life and work.

Adopting e-learning or online learning as an alternative mode of educational delivery according to ARENi (2021) is dependent on several factors which include that e-learning

curriculum or delivery planning should be guided by a concern for equity and inclusion. The effectiveness e-learning strategies is conditioned by various types of preparedness which include technological readiness of e-learning programme; the readiness of curricular courses and supporting content; pedagogical and home-based learning support readiness and the readiness for monitoring and assessment. Above all, the digital skills and competence of teachers that would delivers such e-learning programmes must align with the objectives of such programme. After the curricular courses and delivery technologies are in place, teachers who are in the frontline must be able to design and facilitates learning activities, monitor and evaluate students' home based e-learning processes, adjust their learning management accordingly, and assess students' achievement of the learning outcomes. Designing and delivering e-learning in low resource and low connectivity areas should align with the following guidelines.

1. e-learning curriculum must be contextually relevant to attend to educational needs of the learners
2. choice of technology should be influenced by user's perception of it usability and usefulness
3. feedback/Assessment mechanism should be integrated into the design of e-learning
4. delivery should be learners centred and learners should serve as co-creator of knowledge (AREAi, 2021)

E-learning in general context is the application of information technology such as internet, mobile phones and other computer aided system in the teaching and learning processes.

Effective e-learning system should be an active learning that covers a number of related learning modes, methods and movement. E-learning represents a shift from traditional, teacher-centred and teacher-based classes towards more student-centred classes' activities that feature group activities and limited use of traditional lectures. (Park, J.C. & Bodzin, A.M. 2000)

In e-learning, learners can interact directly with the learning contents that they find in multiple formats (e.g. video, audio, document, etc.). Learners can also chose to have their own learning sequenced, directed, and evaluated with the assistance of a teacher. This interaction can take place within a community of inquiry, using a variety of internet-based synchronous and asynchronous activities (video, audio, computer conferencing, or virtual world interaction).

According to Littlefield (2018), e-learning can either be synchronous or asynchronous activities. Synchronous learning is more structured learning strategy, where the courses are scheduled at specific times and in live virtual classroom settings. In this way, learners benefits from real time interactions hence gets instance messaging and feedback when needed. But the asynchronous learning cannot get instant feedback and messages. The learning content in

asynchronous learning is not provided in live classes, but rather on different learning management system or forms (Littlefield, 2018). Synchronous learning is design for online users who collaborate at the same time and asynchronous learning is used mainly for content management system where users access information at different time without real time collaborations. E-learning can be facilitated by both offline and online teaching tools and resources among which this write up is concerned about. Hence, this theoretical study will dwell mostly on offline and online teaching tools and resources, its benefits and highlighting some strategies to promote e-learning teaching and learning system in the country.

II. OFFLINE INSTRUCTIONAL TOOLS

Offline e-learning makes learning contents be set up ahead of time when access to internet connection is unavailable. Offline teaching platforms are e-learning platforms designed to deliver educational content to students or educators without connecting to the internet. They fulfill the objectives of availability, facility, flexibility that promote e-learning opportunities.

1. *DigiLearns*

Low cost offline m-learning solution that power by USSD/SMS technology to deliver educational contents to students via basic feature phones.

2. *Home Learning Kit*

It is a printed resource designed for parents to ace home-learning needs of their children or helps the children to self-study and creates knowledge.

3. *Rumie*

It creates and share free digital learning content and delivers it to learners in underserved communities with the most to gain.

4. *Worldreader*

It is an inbuilt mobile application that provides access to educational stories to enhance children's literacy skills development. It functions on devices such as Android and ios.

5. *Mavis Talking Books and Pens*

It contains of a digitalpen (Mavis Pen) and a specially printed book (Mavis Book). When the pen touches text or pictures in the book, it reads out the corresponding audio, including interactive games, quizzes, and multi-language translations. Visit: www.maviseducation.com/store

6. *Ubongo*

It is an entertainment technology that improves school readiness and learning outcomes for kids, and promotes social and behavioural change for kids, caregivers and educators.

III. ONLINE INSTRUCTIONAL TOOLS

Online teaching tools help both in and out of the classroom. They're organized into five categories. These tools can help you keep track of the various assignments, deadlines, meetings, and lesson plans you need to be aware of, so you can spend more energy on teaching and interacting with students.

1. *Remind*

Remind is a teaching aid that makes it easier for teachers to communicate with students and parents. Once you sign up, you can send out class announcements, let people know what times you're available for extra help, and send home updates (with read receipts). Remind makes it easy to keep everyone up-to-date.

2. *Any-do*

Any-do was not developed specifically for teachers; many find the Any-do app a very useful teaching tool anyway because it helps them stay on top of their workload. You can use this organizational tool to set reminders for when to complete certain tasks, put important meetings or assessments in a calendar, create to-do lists, and more. It's like a calendar; note organizer, list creator, and alarm clock all in one app.

3. *LiveBinders*

This tool allows you to create a digital binder to organize all your online notes, lesson plans, and content. Anything from YouTube videos, PDFs, word documents, QR codes and more can be added to your LiveBinder, with the bonus that you won't have to carry a heavy physical binder around if you want access to all this information. Teachers can send students information to be put into their own LiveBinders, and they can also share LiveBinders or information in their LiveBinders with other teachers to make collaboration easier.

IV. ONLINE ASSESSMENT INSTRUCTIONAL TOOLS

If you need ideas for exams for your students to take, want to finish grading faster, or are looking for a way to encourage positive behavior, these tools can help you out.

1. *Testmoz*

If you want to create online tests/quizzes for your students to take, Testmoz is an easy way to do this. This site allows you to create tests (true/false, multiple choice, multiple response, or fill-in-the-blank formats), and it also will automatically grade the tests after your students have taken them and send you detailed reports on how well they did. Teachers who use the site praise its simple design and ease of use. Another bonus is that students don't need to register on the site to take a test; Testmoz will generate a password you can give to the students, and by entering it on the site they'll have access to the exam you created.

2. *Socrative*

With Socrative, you can create online exercises, quizzes or games and watch as your students answer the questions in real time. Socrative also has activities and quizzes that encourage collaboration. Their Space Race game is their most popular example of this, and students who play the game will need to work together to solve specific problems. The site also sends teachers reports on where students need more support and guidance so teachers can tailor their future lessons to address these issues.

3. *Knowledge*

Knowledge is an education platform teachers can use to create and share tests, quizzes, and exercises. It emphasizes a simple and easy-to-use interface, so you won't waste time trying to learn how it works. There are thousands of quizzes on numerous subjects available on the site, and once you've chosen one to give to your students, you can distribute it to the whole class or only specific students. They'll then be graded automatically. You can also store frequently-used assignments so you have ready access to them.

4. *ClassDojo*

ClassDojo is a tool used to maintaining class behavior. Teachers encourage students to model certain behavior (which can be general good behavior or something specific, like helping a classmate), and when they succeed, the teacher can use ClassDojo to reward the class or specific students with points. This provides regular feedback for students on their behavior, and the site also creates behavior reports that can be shared with parents.

V. ONLINE COLLABORATION INSTRUCTIONAL TOOLS

Teachers have a ton of resources, and these collaboration teaching tools make it easy for them to share their knowledge with one another.

1. *Lessoncast*

Lessoncast was developed to increase teaching preparedness and professional development. Each of the "lessons" is a video roughly three minutes long, created for teachers, by teachers. The videos cover topics ranging from strategies for teaching more effectively, overviews of lesson plans, and tips for being a more organized teacher. The videos also have supplementary resources users can download and clear outlines of what users should take away from each video. If you're a teacher who wants to learn more about how other teachers teach and what has worked for them, Lessoncast is a great way to get this information. However; you need to be part of a "community" (typically a university or school district) that has partnered with it to access the videos.

2. *Edmodo*

This teaching tool allows educators to share lesson plans, assignments, and other resources with each other. It also gives them a way to communicate with both students and parents or to set up an online classroom discussion among students. Students and parents can only join the site if they are invited by a teacher. Once they join you can communicate with them using a chat feature that looks similar to Facebook Messenger.

VI. ONLINE PRESENTATION TEACHING TOOLS

Both teachers and students can use these presentation tools to liven up lessons and encourage creative student participation.

1. *Animoto*

Animoto helps teacher to create your own educational videos. It's a teaching tool that allows teachers to easily create videos which they can then use to enhance their lessons. The videos can be filmed from any device, and then uploaded to the Animoto site/app. You can also combine videos and images together, and add subtitles or notes to the video. Teachers praise the easy interface and variety of design options.

2. *Easel.ly*

Easel.ly helps teachers to transform basic black-and-white reports or datasets into engaging infographics, with eye-catching layouts, colors, and images. It's a great tool for teachers to create handouts students will be interested in reading, and it can help students' process information and data better because it is presented in an innovative way. If you purchase the pro version, you can also create up to 30 student accounts so your students can use the site to create their own infographics.

3. *Edpuzzle*

Edpuzzle is a way for teachers to upload videos with their own notes/commentary that students can then watch. These can be videos you create yourself, or they can come from other websites, such as YouTube. Once you've uploaded a video, you can choose which portions of it you want students to watch, record your voice to play over part of the video, and add notes. After the video is finished, you can see which students have viewed the video, which parts they watched, and if they watched the video multiple times. You can also easily embed the video into other teaching tools, such as Edmodo.

4. *SchoolTube*

SchoolTube is a video community for K-12 educators and students. Think of it like YouTube, but with more moderation to ensure the uploaded videos are appropriate. Teachers can upload videos, organizing them into different "channels" for ease of use, and they can give students the option to upload videos as well. Whenever a student uploads a video to

SchoolTube, it must be approved by either a teacher or administrator at the student's school before it goes live.

5. *Time Toast*

For history teachers or others teaching lots of dates, TimeToast can be a great resource. It allows you to create interactive timelines that can include images, different colors/fonts, and horizontal and vertical organization. It creates a much more visually interesting set of information compared to standard timelines. Students can also use the site to create their own timelines, either individually or with a group.

6. *Worksheet Generator*

Worksheet Generator has a template for practically every type of worksheet you could want, including word searches, mazes, crossword puzzles, and worksheets specifically formatted for math or reading lessons. If you're tired of formatting worksheets, this tool makes it easy, and they also have hundreds of worksheets other teachers have made that you can print out and use in your own classes.

VII. ONLINE CONTENT INSTRUCTIONAL TOOLS

Whether you teach math, reading, or a different subject, content tools for teachers can help you create engaging lesson plans that get students interested in learning.

1. *Epic!*

Epic! Is a digital library that aimed age 12 students and younger. It contains over 35,000 digital books, organized by age group as well as genre. In classrooms or homes with limited books, students can use Epic! to improve their reading comprehension skills and find books that match their interests. Teachers can also use it to set up reading contests within their classroom, have students write reviews of the books they read, and use it for read aloud times.

2. *Matific*

Matific is a great aid for STEM teaching students math. The site contains math-focused lesson plans, videos, and practice problems, categorized by subject and grade level (K-6). Students can work through creative and interactive "episodes" to learn different mathematics concepts, and then test their knowledge by taking the site's adaptive worksheets. There are multiple assessment methods, and teachers can review student results.

VIII. ONLINE INSTRUCTIONAL PLATFORMS

1. *Zoom*

This is a cloud-based video communications app that allows you to set up virtual video and audio conferencing, webinars, live chats, screen-sharing, and other collaborative capabilities. Zoom can help engage students, faculty, and staff for learning, collaboration, and administration.

2. *Whatsapp*

This is majorly a social media tools though contestable but of course facebook and the like falls into this category. It is a messaging application for both low cost and high tech smartphones. It allows users to exchange images, video, and audio or written messages using their internet connection. Information and knowledge are easily constructed and share through WhatsApp instant messaging. Usually whatsapp can be deployed for teaching and learning by creating a unique group for the target class, sharing curriculum resources and assessing learners' learning process.

3. *Microsoft Teams*

This is technology which enhances virtual communication in Microsoft 365 that integrate the people, content, and tools a team needs to be more engaged. Teachers can leverage Microsoft Team to virtually connect with two or up to 10,000 people from anywhere.

4. *Google Classroom*

This is a free web service developed by Google for schools that aims to simplify creating, distributing, and grading assignments. The primary purpose of Google Classroom is to streamline the process of sharing files between teachers and students.

5. *Edmodo*

Edmodo is an educational technology offering a communication, collaboration, and coaching platform for age 12 schools and teachers. Edmodo allows a whole community/class to learn together from anywhere with all-in-one LMS, communication, collaboration, and Zoom video conferencing tools.

6. *Kolibri*

Like other Open Education Resource Portal (ERC), Kolibri is an adaptable set of open solutions specially developed to support learning for the population without internet access. Centered around an offline-first learning platform that runs on a variety of low-cost and legacy devices, Kolibri Product Ecosystem includes a curricular tool, a library of open education resources, and toolkit of resources to support training and implementation in formal, informal and non-formal learning environment. It comes with tools such as a coach dashboard, exam creation, exercises, assignment of content for differentiated instruction, and a recommendation tool that displays useful and relevant next steps based on a learner's history, progress, and goals. Track educational growth for individuals and groups of learners accurately and easily, even in informal educational contexts.

7. *Screencastify*

This is a Google Chrome extension which is free. It allows over 12 million users to easily record, edit, and share video. These tools can be used by teachers in a flipped classroom

approach in that teachers can provide verbal students feedback, explain assignments, and create full or bite-size lessons using the screencast and voiceover capabilities of the tool. Screencastify provides several training videos for teachers and students for free.

8. *Kahoo*

This is a game-based learning platform that can be used by parents and teachers to create games for learning. There is a resource back of games indexed by topic and grade level. They also offer a reading app (Poio by Kahoot) for students in grade age-3 to learn to read at their own pace and a math app (Drag-on-box) for students in grade age-3. The website offers self-paced games (asyn-chronous) and collaborative games (synchronous).

9. *FlipGrid*

This is a social-learning video platform. It allows teachers and parents to create grids for students to record and upload a video. Students can interact with each other in this asynchronous space via their videos and they can comment, like, respond to, or provide feedback to each other. There is the option of connecting with schools around the world. The app can be accessed via <https://info.flipgrid.com/>

10. *Nearpod*

Nearpod is an instructional platform that merge formative assessment and dynamic media for collaborative learning experiences. It is designed as a platform for teachers to create interactive online lessons that can be taught in a synchronous or asynchronous space. It integrates smoothly with many LMS including Canvas, Google Classroom, EdPuzzle and Seesaw. It provides teachers with student engagement dashboards for every lesson. It has multiple resources for teachers to create lesson. Students can easily access the lessons created by the teachers and can collaborate with each other in synchronous or asynchronous ways. There is a bank of ready-made lessons other teachers have created.

11. *Moodle*

Moodle are learning management system designed to provide educators, administrators and learners with a single robust, secure and integrated system to create personalized learning environments. Moodle provides flexible tool-set to support both blended learning and 100% online courses. Moodle is web-based and so can be accessed from anywhere in the world including areas with low internet penetration. Other example are Blackboard, Canvas, Schoology etc. (<https://moodle.org/>)

12. *ClassDojo*

ClassDojo connects teachers with students and parents to build amazing classroom communities. ClassDojo helps teachers and educators to instantly communicate and engage with students whether you are teaching remotely or in-person.

It is 100% free, and easy to set up. (<https://www.classdojo.com/>)

IX. ONLINE CURRICULUM INSTRUCTIONAL RESOURCES

1. Computer Aided Learning (CAL) – education.bracc.net

This is a programme of the international development organization BRAC which provides ready-made education materials, including digital textbooks and interactive multimedia materials. The materials are tailored for use on multiple devices and can be downloaded for computer or used as mobile and web apps.

2. Learn English – <https://learnenglish.britishcouncil.org/>

This is hosted by the British Council and uses high-quality resources to help users improve their English. The focus is on learning English (cognitive skills) and best suited for learners wishing to improve their English.

3. Khan Academy <https://www.khanacademy.org/>

This website is for the short-attention-span generation squeezes every lesson into bite-size segments (roughly 10-minute video). The teachers can use the video provided to illustrate a point in class or as a resource for students that need extra help.

4. Everfi – <https://everfi.com/>

Everfi offers free digital courses that are interactive and standard-based. The focus is on real-world learning, with courses offered in financial literacy, STEM, social-emotional learning, health and wellness.

5. Deaf World around you – <https://deafworldaroundyou.org/stories>

There are free digital stories in written and sign language in a variety of languages around the world. Enables communities to create content in local and national sign languages and share it in WAY's open content digital library for folktales. The digital libraries are viewable from any web browser and can be remixed by anyone including children, with simple text and video editing tools.

Benefits of Offline and Online Instructional Tools

Here are some of the most important benefits of instructional tools being online or offline:

- Reduce stress of teachers, students, and parents
- Encourage collaboration among students
- Improve knowledge retention
- Improve technological skills
- Reduce teacher workload
- Improve communication between teachers, students, and parents

- Allow students to learn at different paces
- Help teachers identify topics to focus more on
- Improve student participation and engagement
- Create fun and engaging lessons, and
- Encourage students to be more active participants in their own education.
- It gives teachers more time for other tasks,
- Improves student learning,

Instructional tools are all geared towards helping make teachers job easier and the students' time in class more effective.

Strategies to promote e-learning inclusion in Schools

Below are some strategies needed to promote e-learning inclusion in schools.

1. Provision of computers
2. Provision of phones
3. Teaching of students in Information and Computer Technology (ICT)
4. Recruitment and training of qualified teachers
5. Access to internet connectivity

X. CONCLUSION

The continual challenges facing the traditional teaching strategies such like insecurity and pandemic as currently been witness in Nigeria and worldwide demanded the use of alternative teaching strategies to enhance teaching and learning. Hence, adopting electronic teaching and learning strategies will promote equal access to learning as well as promoting digital equity among the citizens. It is opined that all stakeholders should do all things possible to evoke e-learning and digital literacy to the teaching and learning process as alternative teaching strategies and also to enhance the conventional teaching strategies in the country.

XI. RECOMMENDATION

With the specific and general discuss above, it is recommended that:

1. Stakeholders should do all things possible to encourage e-learning and digital literacy to the teaching and learning process in the country
2. Stakeholders provide necessary infrastructure and funds needed to implement e-learning teaching and learning strategies to learners.
3. Create conducive environment that permeate the implementation of e-learning teaching and learning strategies such as provision of electricity, trained manpower, adequate welfare etc.

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