INTERACTIVE BOARDS IN THE NIGERIAN SCHOOL SYSTEM: CHALLENGES TO EFFECTIVE UTILISATION

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ABSTRACT
The chalkboard is one of the earliest instructional medium in visual instruction. In spite of this it has continued to persist as the most common medium in the educational system. Several factors have caused this, one of which is the fact that it has continued to metamorphose with the trends in education, the latest of which is the Interactive Board. The Interactive Board, popularly known as the Smart Board, is the chalkboard of the moment and has been around since the early 1990s but has not become popular in the Nigerian educational system. This paper examined the challenges facing its effective utilisation. Some of the challenges discussed are administrative support, cost, electricity, availability, technical skills, and so on. Suggestions were made to alleviate the challenges, and they are provision of alternative power, training teachers to use the board, providing maintenance facilities.
Keywords: Interactive Board, Challenges, Nigerian School System.

Introduction

The school has long been associated with education in modern society. This is because most of what the child learns to enable him function in society and play his role as an effective citizen is acquired in the school. One of the most common identifiers of a school is the presence of a chalkboard (ClassNotes Edu, 2023). This is so with developing as well as developed countries. An individual could see a room with chairs and tables and not be certain as to exactly what it is used for; but when he/she sees a chalkboard, even in an empty room, the conclusion in most situations is that it is some form of school or classroom.

There are various stories of the origin of the chalkboard. Some say it had been used in Europe since the 16th century where it is claimed to have been used for music education and compositions (Owens, 1998). Others say the concept of the chalkboard was borne out of necessity in 1801 by a Scottish Geography teacher and Headmaster of the Old Boys' School in Scotland. James Pillans wanted a place where he could demonstrate Map Reading at a central place for his students to view at the same time, thus he made a bigger version of the slate the pupils already had and placed it on the front class wall. He made it by painting planks with black paint and using colour chalk to illustrate his lessons (Gazetteer for Scotland, 2021; Molenda, 2008). From this simple use

the chalkboard became an essential part of classroom furnishing. The chalkboard Pillans initiated was a blackboard and also a wall chalkboard.

The chalkboard was a technological feat at the time it was developed. It was initiated to solve problems that were plaguing the educational system at the time and would continue to do so now if it is discarded. It was used to give learners simultaneous view of the teacher's teaching through visual illustrations. It helped to reduce the stress of teaching for teachers who were required to write in individual pupil's slates. Its introduction changed the method of teaching and testing in the school system and enabled the schools enrol more children than they did previously (Jackson, 2002).

The chalkboard is any reusable writing surface on which texts and drawings can be made with the aid of a stick of chalk. The chalkboard was traditionally known as the blackboard because of the black colour with which it has long been associated. It is now called chalkboard because the colour of modern-day boards is not always black. They are white, brown, yellow, green and even blue. There are several types of chalkboards used in the school system. Some of these are the following:

The Blackboard is the traditional and most common chalkboard used in the school system. It is so common in the school system that a classroom is usually identified with the presence of one of these. In its simplest form the blackboard is a part of the class wall painted black or a piece of board painted with a black matte paint. The highest grades of blackboards are made of rough porcelain enamelled steel that can last for a long time with intensive use. The material used for writing on the blackboard is the chalk, which is a stick of compressed dust made from calcium sulphate. It is the cheapest type of chalkboard in procurement and use.

The Wall Chalkboard is a board that is permanently fixed to the class wall. It is either a part of the class wall or it is a wooden board like plywood fixed to a part of the class wall. Although they could be any desired colour, most wall chalkboards are black. They are the type of chalkboard usually seen in classrooms. They provide a good writing surface and usually provide more working space than other types of chalkboards.

The Whiteboard, also known as White Chalkboard, Dry-erase or Marker boards, these are chalkboards that are white. The introduction of the whiteboard made the use of chalkboard rather than blackboard more common (The Editorial Team, 2012). They are usually fibre glass, rubberiod boards or a flat plastic surface. The materials for writing on these boards are erasable markers that come in different colours. The white chalkboard is important because it provides contrast to most colours used on it when colour is necessary; it also doubles as a projection screen. This saves the cost of acquiring additional screen when projections are made in the classroom (Omieibi-Davids, 2021). One of the main reasons for the development of the whiteboard was to prevent the messiness of the chalk used with the blackboard (Archer, 2023).

The magnetic chalkboard is a very recent development in chalkboard technology. Its magnetic characteristic makes the chalkboard, which is already a versatile device in instruction, even more versatile. Visuals that are flat and not very heavy like templates, pictures, posters, maps and other small objects like plastic models are easily stuck on it with the aid of magnets or magnetic strips. This board is particularly necessary the content involves illustrating division or separation of things.

The Mobile Chalkboard is a chalkboard that can be moved about when necessary. Most chalkboards in the classroom are fixed to the wall or are a part of the wall. There are others, however, that are not. These are sometimes carried on easel. There are others that are made of tarpaulin sheet with light wooden or metal strips attached to the top and bottom to prevent them from flying in the air when being used. They can be folded up and carried in a roll easily. There are also others that have their own legs. Mobile chalkboards are ideal for out-door classes and field trips. They have the capacity to turn any place into a classroom.

Electronic Chalkboard is the most recent development in chalkboard technology. They are called electronic boards because they involve the use of computers and other electronic devices. There are 2 types of electronic boards in the Nigerian school system. They are the Electronic Copy board and the Interactive board. These chalkboards require the use of electricity and a computer system to make them effective. The use of these boards is controlled from the computer and things written on them can be sent to the computer. The Copy Board allows information written on it to be printed out for record purposes or distribution, and also allows such information to be stored directly into a computer. The special feature is that it is possible to copy information written on it and it is possible to hide information written or drawn on it when such is not necessary. This is because the board has 2 pages that can be used. Only one of these pages or sections is visible at a particular time. Thus, materials the teacher does not want his learners to see immediately can be hidden. The Interactive board is an electronic board that allows a continuous exchange of information between the user and the user.

Persistence of The Chalkboard as an Instructional Medium

The Chalkboard which was first introduced as the Blackboard has persisted for a long time in spite of more modern and technologically advanced mediums of visual communication. Some of the reasons for this persistence are the following:

a. It gives simultaneous view to everyone in the learning environment. Information written or drawn on the chalkboard can be seen at the same time by all the learners in the classroom. All that is required by a teacher in order to achieve this for a large class is to increase the size of his write-up. This is the reasons Pillans developed the blackboard in 1801 and it is still use to date (The Editorial Team, 2012).

b. Versatility in use is one of the reasons why the chalkboard has persisted for as long as it has. The chalkboard has a lot of uses in the classroom. It is used in the development of ideas taught during a lesson; in presenting visual illustrations. These could be drawings, charts, posters, diagrams, projections. It is used for recording new words, terns, important names and dates that the teacher wants to emphasise or explain as the lesson progresses; for solving quantitative problems e.g. Mathematics, Physics, Chemistry, etc.; for giving assignments not contained in students' textbooks; and in writing down examination instructions and questions, especially at the junior levels of the educational system.

c. The chalkboard is economic in use. A chalkboard once provided last for a very long time, in spite of daily use and reuse by different teachers over several years. It is not like charts and slides or films that cannot be wiped clean. With the chalkboard unwanted information is simply cleaned off with dusters. When the surface wears off it is easy to maintain by cleaning with water or charcoal in the case of blackboards or coating with chalkboard paint instead of having to make a new one. When white boards get too dark from constant use, they are simply cleaned with various cleaning solvents. One of such solvents is common household bleach.

d. The chalkboard is always available in classrooms of the school system, especially in Nigeria. The presence of the chalkboard in a room makes people know it is a classroom. This is because it is always available for use both by learners and teachers. A teacher who is not sure of what media will be available for him to use in a particular class or lesson is always sure of there being a chalkboard even if he has never entered the class. The only thing the teacher in modern times could not be certain of is the type of chalkboard he would find in the classroom. This is because a lot shools have moved on from the traditional chalkboard, which is the blackboard to more modern types. It is a very rare thing not to see a chalkboard in classroom.

e. The chalkboard is attention compelling. It is the focus of the learners in the classroom situation. This is as a result of the many functions it is used for. In the teaching-learning environment the chairs in the classroom are usually arranged to face the chalkboard, and the teacher stands or sits in front of it. Its size, position, colour and numerous uses ensures that one of the things people do when they enter a classroom is to look to see what is written or drawn on it, whether it is their classroom or not.

f. The chalkboard is good in presenting impromptu illustrations. It is not always that the teacher can bring into the classroom all the visuals he needs for a particular lesson. He is not able to do this for several reasons. Sometimes the reason is that he does not know before time that he would need such visuals, not because he did not prepare for his lesson but because at times things that are not planned for need explanation in the classroom. At such times the chalkboard becomes very handy, especially if the teacher can draw. He can quickly make such illustrations on the board, make his explanation and then continue with his lesson.

g. The chalkboard is easy to use. It can be used by anyone who is literate. All it takes to use it in most instances is the ability to write. It does not require a manual to make use of. These days even illiterates who cannot read or write can still make use of it when they use magnetic letters and images on the magnetic board. Advancements in chalkboard technology is ensuring that everyone can make use of it.

h. The chalkboard is constantly updated to fit modern purposes. The chalkboard started as the blackboard in 1801. It was updated into a porcelain-based enamel green which became popular in America in the 1960s and then fibreglass/plastic-based whiteboard in the 1980s. The magnetic board was introduced a few years later, followed by the electronic boards in the 2000s (Jackson, 2002; The Editorial Team, 2012; Black, 2023).

The Interactive Board

The chalkboard has continued to metamorphose into different forms without actually discarding the previous forms. This is one of the reasons why it has remained relevant in spite of more modern and sophisticated visual technology in instruction (Black, 2023). One of the latest forms it has evolved into is the Interactive board. The Interactive board, also known as Smart board, is a touch sensitive digital whiteboard that runs off to local computer resources. It makes use of a computer and multimedia projector to display information to people in the same location. This is an electronic board that allows a continuous exchange of information between it and its user. This is because the user can give a command and have the necessary information revealed in a few seconds. The Smart board is actually a brand name of one of the producers of Interactive board;

the board is referred to by this name because they first envisioned the idea of the interactive board in 1987 and has continued to improve it over the years (Cunnings, 2023). The Interactive board is made up of the following basic equipment (Archer, 2023; Black, 2023):

1. The specially designed white chalkboard which is linked with electrical cables and a USB cord.
2. A special pen which is supplied with the board. The operator uses the pen to control the computer from the board in a way that is similar to a touchscreen on a personal computer
3. A computer, preferably a laptop in which the software for the board is installed, and is used to direct the use of the board.
4. A multimedia projector. The projector displays the computer program on the special developed whiteboard.

The interactive board is one of the most exciting inventions that have been made to be used by the classroom teacher. It is important that every teacher learns to use. This is because it has features for classroom instruction that are amazing.

Merits of the Interactive Board in Instruction

The use of Interactive board has the following benefits in the instructional system:

i.   It has all the functions and advantages of a regular chalkboard in the classroom. It can be used to develop ideas taught during a lesson; used for all kinds of visual presentation; solve quantitative problems in Mathematics, Physics, Chemistry, and so on; used in recording new words, important names and dates; used for writing assignments and questions.

ii. It is a white chalkboard and so has all the advantages of a white chalkboard. Because it is white it is useful when colour is necessary and doubles as a projection screen for other projected media like slides and overhead projections.

iii. The interactive board can be used as a wall chalkboard or a mobile chalkboard. Most interactive boards come with stands to enable them stand alone. These stands can, however, be removed and the chalkboard fixed on the wall.

iv. Information can be transferred from the computer to the chalkboard and from the chalkboard to the computer. This is an edge it has over the copy board which only allows transfer of information from the board to the computer.

v.   Although most interactive boards come with a special pen that is used in writing on the surface, with a good number of them it is also possible to write with the bare finger. This forestalls the problem of buying the pens when they are damaged or lost.

vi. With regular boards it is necessary to wipe off information that has been written to enable one to continue to use the chalkboard. By doing this information on the board is lost and has to be put up again if it is needed. This is not the case with the interactive board. With the interactive board information can be stored and retrieved at a later time or date.

vii. The interactive board has a large store of educational content which is already provided with the board. This content is applicable to all levels of learners. It is possible for the users to also feed in and store their own information. Notes and diagrams can be prepared, saved and reproduced at will. This is particularly important for teachers who have to teach the same content to multiple classes within a short time.

viii. It enables the user download materials from the internet and other sources for classroom instruction. Such material can be saved and stored for later use.

ix. The most exciting function of the interactive board and what gives it its name is that it is interactive. This means that the user can 4 actually manipulate information on the board. In doing this it possible to colour objects or the background of the board as desired; it is possible to move around objects and write-ups on the board; it is possible to increase and decrease the sizes of objects on the board and so on. The interactive nature of the interactive board makes it the most exciting medium in instruction at present time. It is indeed a delight to use in the learning situation if properly and efficiently utilized

x. It eliminates the cost of purchasing dry markers, erasers, chemical to make the whiteboard clean; chalk and yearly painting or darkening of the blackboard.

xi. It eliminates the cost of producing instructional materials for every lesson. With the interactive board these can be sourced and saved in the system for use whenever necessary.

xii. Most interactive boards have the capacity to record content on the board and the accompanying explanations done by the teacher in the classroom automatically. This is important to the school authority, the teacher and the students. For the school authority it is a reference point to assess the activities of the teacher in the classroom. It is important to the teacher she can save his teaching for later use and to self-evaluate. It is important for the students because they can view the content at a later time to watch or listen to any part of the lesson, they are not clear with (Archer, 2023; Black, 2023; Omieibi-Davids, 2021, Ozoemelan, 2018; Dike, 2023.).

The Interactive Board in Nigerian Education

The interactive board is present in the Nigerian educational system. First introduced into the Nigerian educational system sometime in 2012, it has gradually become very popular with private organisations in all forms of training, including schools. It has, however, not been slow among public schools at all levels of the educational system. Segun (2023) asserts that the momentum of use of interactive boards in public schools is building as they are used in public schools in Adamawa, Yobe, Katsina, Oyo, Abia, Rivers, Edo, Ekiti, Benue, Akwa Ibom, Cross River and Bayelsa.

Rivers State is one of the states of Nigeria that have invested massively in the use of the interactive board in basic education, particularly Primary education. In 2009 the state under the administration of Hon Rotimi Amaechi transformed its primary schools from its former dilapidated nature to fully equipped model primary schools with modern libraries, sports facilities, demonstration farm and computer laboratories with interactive boards. To get qualified teachers to man these schools and provide in-service training in the use of these facilities, the universities in the state were forced to upgrade their facilities (Igidi, 2009). The facilities provided are lying idle in most of these schools (Uduak and Kasumu, 2022; Ehimen, 2019).

Fig. 1: Interactive board in a public primary school in Rivers State.

In 2021, the Federal government of Nigeria, in collaboration with the Rivers State Government, through the Rivers State Universal Basic Education Commission (RSUBEC) and the Rivers State Universal Basic Education Board (RSUBEB) commenced the construction of a modern digital smart basic school in the state. The purpose is to provide have interactive boards in every classroom and learning space of this school Nigerian Tribune Reporter, 2021; The Tide, 2021).

Challenges of using the Interactive Board in Instruction

The provision of interactive boards in the Nigerian school system is laudable and meant to improve the school system and ease learning experience of the pupils and students. Thus, there is a need to ensure that a situation where facilities provided are left moribund in the school system by identifying why this happens. There are a lot of challenges to the use of interactive board in instruction in Nigeria. Some of these challenges of using the interactive board are the following:

Administrative support is one of the challenges to the provision and use of interactive boards in Nigeria. The National Policy on Education (FRN, 2013) states the support of the federal government in the provision and utilisation of ICT in all levels of the Nigerian educational system. In spite of this proclamation, however, not much has been done by the various governments both at the federal, state, local governments and school authorities to ensure that this is actually implemented in the schools. Administrative support means providing regulation for the use of interactive boards in all classrooms. This is missing in the Nigerian school system (Nnadozie and Karanwi, 2017; Moemeke, 2019).

The Interactive board being a system is a challenge to its use. This means that it has various parts that have individual functions that will enable its function. It requires the use of a lot of other equipment besides the chalkboard. This makes this medium a very expensive medium to use in instruction. The various components have to be available and functioning to use the board. If for any reason one part is not functioning or available, then there is no interactive board. They are the board, the computer, the multimedia project and the pen (Ozoemelan, 2018). There is also the Personal Response System (PRS), also known as Clickers that allows learners answer test questions posed on the board or enables them take part in polls or surveys. Although an essential part of the board, this is in most cases not included in the board at the time of purchase is included in limited

numbers. This is a problem in the Nigerian school system because it is usually not available for the students to use the board effectively (Omole and Uveruveh, 2016).

Electricity, which is a bane to the use of gadgets in Nigeria is a challenge to the effective utilisation of the interactive board in the country. It is an electronic gadget an so cannot be used in the absence of electricity. Electricity is required to power the board; it is also used for the multimedia projector and the computer used with the board. The electricity issues that affect the use of the board are as follows:

- Power Failure
- Power Fluctuation, which causes power surge (Rahman, 2017; Moeke, 2019; Omieibi-Davids, 2021)

Technical Skills are needed to make use of the interactive board. It requires proper training to use the board in the learning situation. The interactive board is a specialised chalkboard that requires special training and skills to use effectively (Mustapha, 2018). Most teachers do not acquire these skills in the course of their professional training and are not taught these skills in the course of their professional work. The most common technical situation that occurs is the pen refusing to calibrate the board. This is a disconnect between the board and the pen. This is frustrating to users. Another technical problem is lack of connection the board and the computer (Al-Faki and Khamis, 2014).

The writing materials used on the board is sometimes the challenge to its utilisation. It is possible to write on the interactive only with the use of the special pen that is supplied with it. These markers are usually supplied in limited quantity when the board is supplied. Once the pens supplied with the boards are used up, gone bad or lost, there is usually the problem of getting new ones. In a lot of situations, regular chalkboard markers or permanent markers are used, which eventually cause damage to the boards when they are impossible to wipe clean as shown is the picture below.
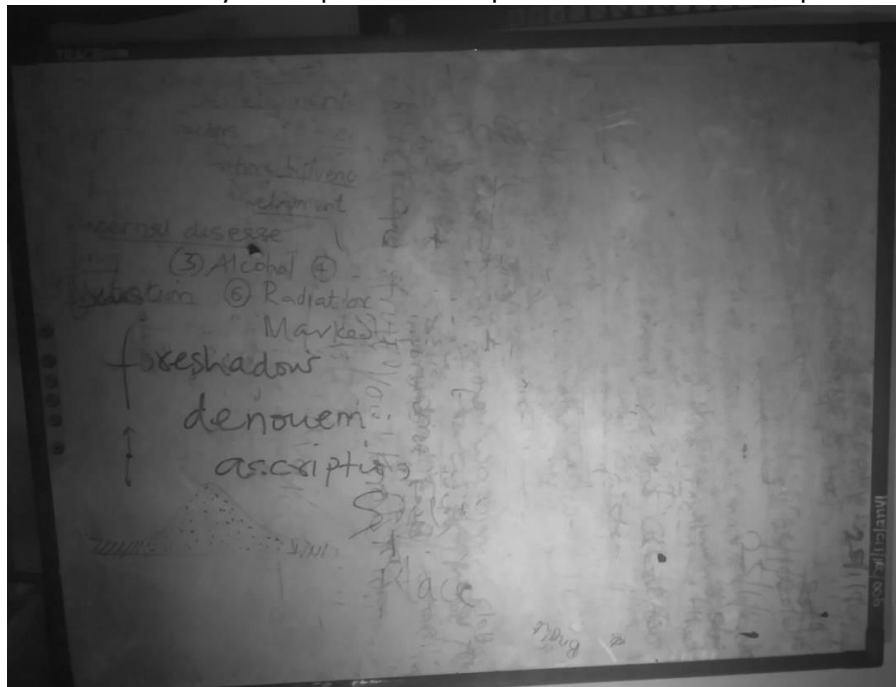

Fig. 2: Interactive board damaged as a result of use of permanent markers

Availability of the interactive boards to the teachers and the classroom determine if they are utilised in the learning situation. The interactive board is not widely available for use in the school system (Ajelabi, 2015; Mustapha, 2018). There are a lot of schools, particularly public schools that do not have it for use. Unlike the regular blackboards that can be easily made with plywood or by painting a part of the class wall black, the interactive board is imported from outside the country. When they are available in public schools, they are not found in regular classrooms but in special computer rooms where they are locked away from regular use (Uduak and Kasumu, 2022; Ehimen, 2019).

Absence of local Nigerian content in its internal memory is a challenge to its effective utilisation. Part of the attraction of the interactive board in its use for instruction is that it has in-built content for most subjects at the primary and secondary school level. The problem with this is that the content for the software is based on the American and European Schools to the detriment of the Nigerian school curriculum and content (Omieibi-Davids, 2021).

The cost of the interactive board is a major deterrent to its acquisition and use in the school system. Interactive boards are generally expensive devices in use (Rahman, 2017). Most of them cost between Three hundred and fifty thousand Naira (₦350,000) and Four hundred and fifty thousand Naira (₦450,000) in the Nigerian market. The Promethean ActivBoard Touch 78 which is one of the Interactive boards in the Instructional Resource Centre of Ignatius Ajuru Univerisity of Education cost N765, 235.00. The Sharp AQUOS BOARD 70'' Class Display System cost over N2.6 million (www.paykobo.com). In addition to this cost, they require the use of a computer and multimedia projector, and Internet connection to use it effectively. The cheapest is the Hitachi StarBoard which cost N250,000 (www.247projectorplaza.com;).   The total cost of these devices is more than what most head teachers get as working capital for a whole year. Most schools, including private and public schools cannot afford an interactive board (Omole and Uveruveh, 2016). This situation is made constantly worst with the ever-increasing devaluation of the country's currency against the major currencies of the world that happen to be the manufacturers of these boards.

Theft is a major challenge in the use of interactive boards in the school system. This occurs in various forms. Some of these are the following:

- Stealing of the boards. In 2013, 5 out of 6 interactive boards installed in a school in Port Harcourt were stolen.
- Stealing of the Multimedia projector used with the boards

Fig. 3: *Multimedia projector seating on the ceiling, after the projector was stolen*

- Stealing of the Laptops provided for the boards
- (Nnadozie and Karanwi, 2017; Moemeke, 2019).

Vandalism is a challenge to the use of interactive boards in the school system. This has been done in various forms
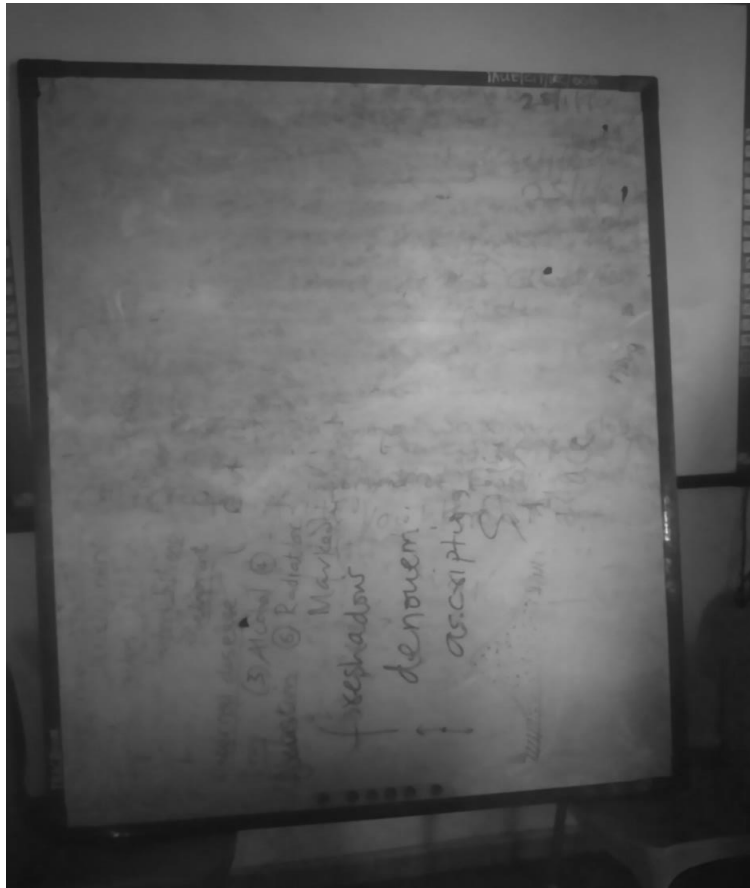
- Ripping interactive boards off the wall

Fig. 4: Interactive board ripped off the class wall, scratched up and thrown away

- Scratching boards with sharp objects
- Writing on boards with permanent markers
- Ripping off the electrical cables of the interactive boards. The board below has one cable instead of the two it should have.

The Poor quality of most imported interactive boards lead to the abandonment of a lot of boards. There are a lot of low-quality interactive boards in the Nigerian market. These boards, bought at exorbitant prices, do not last for any length of time. There are some that are bought that have not functioned as interactive boards for even one second. Some are not supplied with the necessary software; others do not calibrate; still others do not turn on. These boards, which are bought with valuable money that could have been spent in other aspects of the school system, are abandoned on class walls or in school stores.

Fig. 5: Several Interactive boards in a classroom, which are obviously not in use.

Maintenance is another major issue that impedes the utilisation of interactive boards. There is an acute shortage of maintenance personnel for interactive boards procured at exorbitant cost in the Nigerian society (Nnadozie and Karanwi, 2017; Moemeke, 2019; Ajelabi, 2015). In the past 13 years of using Interactive boards in the Instructional Resource Centre of the Ignatius Ajuru University of Education where this author resides, there has never been success in getting a technician to repair or even explain why the boards supplied stopped functioning.

Software Problems deter people who have had bad experiences with the utilisation of this media to avoid it. The interactive board is purchased with a user-friendly software which enables its installation and use with the computer. The software is loaded onto a local smart board software compatible computer or network from which it can be called upon for use on the screen. The use of the software enables the functioning of the board as an interactive board rather than just a whiteboard. There are several challenges associated in using the interactive board. Some of these are as follows:

- Crashing of non-compatible computers. Not all computers are compatible with interactive board software. This becomes a problem as it is known to have crashed several computers.
- Loss of software. The software for the board is damaged, misplaced or stolen.
- Hoarding of software. The software is installed in the computer of an operator/technician who does not allow other teachers make use of the computer.

Another problem of the interactive board in the Nigerian school system is its lack of use even when it is available. A lot of schools acquire interactive boards because there are regulations for them to have such boards in the schools; others do it because it makes them feel like they are modernising their classrooms like other school. Do these schools actually make use of these expensive boards they buy? In a lot of schools, interactive boards are there for decorative

purposes. They are never used again after the day they are installed. When they are used, they are used only as projection screens and whiteboards, rather than interactive boards (Ajelabi, 2015, Rahman, 2017).

The problems with using or not using available interactive board, can in a lot of situations be attributed to a lack of ICT competence. In spite of the pervasiveness of ICT among young Nigerians, a lot of teachers are still ICT illiterate. Such teachers find it difficult to make use of the interactive board. The fear or weakness of the use of technology is transferred to the use of interactive board in the classroom (Mustapha, 2018; Al-Faki and Khamis, 2014).

The lack of competence in ICT schools makes teachers put interactive boards to wrong use. Interactive boards are used wrongly in the classrooms by teachers in a lot of situation. Because a lot of them are smart boards that have access to the internet, some teachers simply download any content they see on the internet and read it to the students, like is seen in the picture below. Rather than reading content, the teacher should use the resources it provides to enable the children see this content and experience it through visuals and video. This defeats the purpose of the interactive board, which is to allow the learners interact with content on the board (Ehimen, 2019)
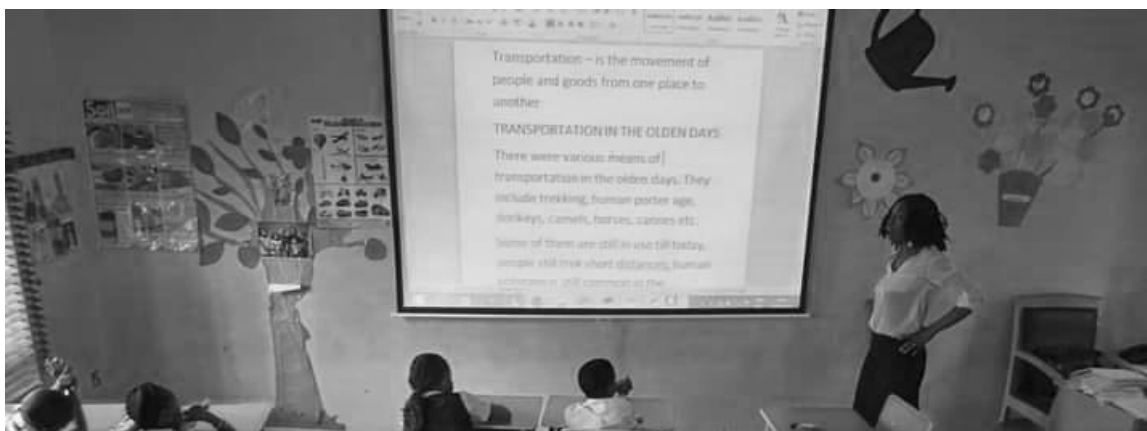

Fig. 6: The Interactive board in use as a projection screen

Poor Internet Service is another challenge with the use of this board in the school system. The Interactive board is a smart board which requires the use of the internet to function effectively. It is required to access and download content and diagrams from various online sources. Poor internet service is, however, a problem in the Nigerian environment. It is sometimes not available or too slow (Moemeke, 2019). This is not surprising considering the fact that 568 out of 756 licenced Internet Service Providers (ISP) was comatose of off March 2022 (www.thisdaylive.com).

Ignorance of the existence of the interactive board and its function prevents school proprietors and teachers from acquiring or making. Teachers with no knowledge of the existence or function of interactive board would normally not make use of it. A school in Rivers State has had interactive boards since 2012, but out of over a hundred teaching staff, only one teacher makes use of it to date (Uduak and Kasumu, 2022; Mustapha, 2018). Omole and Uveruveh (2016) are of the view that most teachers in Delta State do not know what the interactive board is because they have never seen it.

Recommendations

The following recommendations can solve some of the challenges facing the use of the interactive board in the Nigerian school system:

a. There should be a minimum standard quality for interactive boards imported into the country to prevent the country's educational system being a dumping group for poor quality or substandard boards produced in other countries. This will help to build confidence in the users.

b. Acquire interactive boards that do not require the use of a multimedia projector. This reduces the cost of the interactive board and reduces the calibration problems. As most interactive boards that use multimedia projectors are not purchased with the projector, buying the projector adds an additional cost of between Two hundred thousand to Four hundred thousand Naira (N200,000–N400,000) to the expenses. Choosing an interactive board that does not need an external projector eliminates this extra cost.

c. Use power inverters or solar systems to reduce the problem of power failure and fluctuations. These can substitute the necessary power. Interactive board technology is much more advanced presently than it was in 2012. It is possible presently to use Interactive boards that are powered by through the USB power from the personal computer, as they use 0.5 Watts of power. Such boards, it they do not require multimedia projectors can be used with a fully charged laptop.

d. Acquire interactive boards that can be inputted with the finger, any opaque material or any translucent material, as well as the pen to reduce the problems associated with the use of the pen.

e. Provide interactive boards in regular classrooms rather than is computer laboratories that are locked up or monopolised by a few teachers or technicians.

f. Provision of adequate security for classrooms where such boards as installed. This can be done be ensuring such classrooms are locked after use to prevent unauthorised people getting to the boards. It can also be done by providing security cameras which will serve as a deterrent to thieves and vandals.

g. The software for the board should be properly labelled and kept safe in a library or shelf to prevent loss. This will make it possible to easily access it and install it in other systems when there is a need.

h. Teachers should be properly trained in the use of the interactive board to prevent dependence on others for its operation and use in the classroom. This training should be part of the professional training of teachers and through conferences and workshops. This is important to prevent the employment of interactive board operators who add to the cost of the educational system.

i. It is necessary for content of the software to be adapted to the needs of the Nigerian school system. There is the need to train and motivate people to develop local content that relates to the Nigerian schools' system to be inputted in the software sold in Nigeria. This can be done by regulation of the government through the Educational Media and Technology Association of Nigeria (EMTAN).

j. There is a need to train people who specialise in the repair of these boards as a course in technical schools. This will reduce the number of discarded interactive boards in our schools.

Conclusion

Interactive board is part of the trend in the educational system and has a lot to contribute to classroom instruction. It can only be effective in instruction if it is actually used for the purpose it is provided, which is to enable learners interact with the content on the board. It is important to note, however, that no matter how sophisticated an instructional media and environment is, it can never substitute an effective teacher.

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