

Article

Relevance Of Boards and Charts in Contemporary Instructional Delivery in Gokana, Rivers State, Nigeria

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Abstract: This study examines the continued relevance and importance of chalkboards and charts as instructional materials in modern classrooms, particularly for effective teaching in resource-constrained areas. Despite advancements in technology and the rise of computer-based instruction, these traditional tools remain indispensable, especially in rural settings where access to electricity and innovative teaching media is limited. A library-based research method was employed, reviewing the perspectives of educationists and technologists on the enduring utility of chalkboards and charts. Key findings highlight the advantages, disadvantages, and practical applications of these tools in classrooms, emphasizing their role as cost-effective alternatives during power outages or in underserved regions. Field observations in Gokana, Rivers State, Nigeria, revealed the persistent reliance on these materials due to infrastructural and financial challenges. The study concludes that chalkboards and charts remain critical for achieving learning objectives in rural education and recommends their continued use alongside efforts to integrate innovative teaching methods.

Keywords: Boards, Charts, Contemporary, Gokana, Instructional Delivery Relevance

1. Introduction

There seems to be a viral perception among teachers and students at all levels of education nationally and internationally, that since our new world is blessed by the innovations brought about by the computers, the e-classroom and the internet surfing, there is no longer any need for the traditional use of chalk boards and charts in the classroom. This perception may not be generally ideal as the researcher uses this paper to show how continuously important charts and boards can be for teachers and learners. It is not a surprise that some schools and colleges are still using charts and boards in instructional delivery especially in some non-urbanized locations.

According to Achuonye (2004) and Ashton (1999), a blackboard, often referred to as a chalkboard, is a writing surface that may be used repeatedly for creating text or drawings. This surface is typically composed of calcium sulphate or calcium carbonate sticks, also known as chalk, which are utilized for this specific purpose. The original composition of blackboards consisted of sleek, slender panels crafted from slate stone that exhibited a black or dark grey hue. A blackboard is often a board coated with a matte dark paint, commonly black or occasionally dark green. The utilization of closed-cell PVC foam board, commonly referred to as matte black plastic sign material, is also observed in the production of personalized blackboard art. Restaurants and bars have adopted the practice

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of utilizing blackboards on A-frame structures as a means of promoting their daily specials [1].

A contemporary iteration of this technology involves the utilization of a spiral-shaped plastic sheet that is stretched over two parallel cylinders. This design allows for the extension of writing space by scrolling the sheet, while still preserving the previously recorded content (Bukoye, 2019). The most superior quality blackboards are constructed from a coarser variant of porcelain enamelled steel, typically available in black, green, blue, or occasionally other color variations. Porcelain exhibits exceptional durability, rendering it very resistant to wear and tear. Consequently, blackboards constructed from porcelain typically demonstrate a lifespan of 10 to 20 years when subjected to intensive utilization. Lecture theatres often include a grid configuration of multiple blackboards. The lecturer strategically positions the writing boards within accessible range, afterwards relocating them beyond reach, therefore facilitating the simultaneous display of a substantial quantity of material [2].

As stated by Aggarwal (2012), the removal of chalk marks can be accomplished through the use of a damp cloth, a sponge, or a specialised blackboard rubber, typically composed of a wooden block encased in a felt pad. Nevertheless, the removal of chalk stains from certain varieties of damp blackboards might be a challenge. According to recommendations provided by blackboard manufacturers, it is advisable to fully cover a fresh or recently resurfaced blackboard using the side of a chalk stick, followed by brushing off the chalk as usual, in order to prepare it for usage. In recent decades, significant advancements have been made in the development of the traditional blackboard [3]. The slate, which was previously utilised by students as a medium for completing their academic tasks, has now transformed into an aesthetically pleasing element within both classroom and domestic settings.

2. Materials and Methods

This study employed a library-based research approach, supplemented by field observations conducted in Gokana, Rivers State, Nigeria. The methodology involved two key components:

Library-Based Research:

Relevant literature from educational journals, books, and conference proceedings was reviewed to explore the historical and contemporary use of chalkboards and charts in instructional delivery. The theoretical perspectives of educationists, instructional technologists, and pedagogical experts were analyzed to provide a comprehensive understanding of these instructional tools. Key sources included works by Achuonye (2004), Ashton (1999), Bonk & Cummings (1998), Bukoye (2019), Aggarwal (2012), Abie (2019), and Abolade (1998).

Field Observations:

Direct observations were conducted in selected rural schools in Gokana, Rivers State. The researcher examined how teachers and students utilized chalkboards and charts during instructional activities. Specific attention was paid to classroom infrastructure, instructional methods, and the availability of alternative educational technologies. Observational data provided contextual insights into the reliance on traditional instructional materials in resource-constrained environments.

Data Collection and Analysis:

Data from the literature review were thematically organized based on identified categories such as material composition, durability, utility, and pedagogical value. Observational notes were analyzed to corroborate findings from the literature,

highlighting the practical implications of using boards and charts in contemporary classrooms.

Ethical Considerations:

The study adhered to ethical research principles, including respect for participants' privacy and the confidentiality of observed school activities. Permissions were obtained from relevant educational authorities before conducting field observations. This mixed-methods approach ensured a well-rounded exploration of the relevance of boards and charts in instructional delivery, offering both theoretical and practical perspectives.

3. Results and Discussion

According to Cheng, Cheng, and Tang (2010) and Achuonye (2004), various types of boards exist, including but not limited to magnetic boards. Magnetic boards are typically constructed from steel and covered with a magnetic porcelain finish. The board is then encased with a polished timber frame and frequently includes a rail for the purpose of storing chalk, erasers, and such items. A significant number of individuals exhibit a preference for magnetic chalkboards in comparison to alternative types, due to its capacity to facilitate the attachment of papers, charts, and other essential documents to the board's surface through the utilisation of magnets, hence obviating the need to transcribe the information manually [4].

1. Lap boards are essentially reduced-scale replicas of conventional chalkboards, commonly provided to young children for educational purposes. The utilisation of chalkboards can serve as a catalyst for the enhancement of writing proficiency among several children, thereby garnering favour from educators due to its potential to reduce paper consumption within the school setting.
2. Multi-Task Boards, commonly employed in educational institutions and other pedagogical settings, are chalkboards designed to facilitate multiple tasks simultaneously. A variety of distinct attachments are offered for these chalkboards, enabling educators to conveniently store books and other materials within close proximity to their instructional area.
3. The Boars Menu is commonly observed in many establishments such as cafes, coffee shops, restaurants, and other enterprises within the hospitality and commercial sectors due to its exceptional durability. The staff utilises these chalkboards as a means to promptly and effectively inscribe the daily specials, so enabling the flexibility to modify these menu items as desired.
4. Decorative boards are highly beneficial for children who experience challenges in maintaining prolonged concentration and focus. The incorporation of visually appealing elements, such as lion or banana-shaped boards, can enhance their motivation and engagement while completing academic tasks. Adults in professional settings such as workplaces or stores sometimes utilise these chalkboards as a means to enhance the visual appeal of their routine announcements [5].
5. A combination board refers to a type of board that incorporates many functionalities, such as a chalkboard, whiteboard, or pin board, within a single unit. These particular boards offer significant utility, particularly for educators, as they afford a diverse array of surfaces for instructional purposes.

Importance of chalkboards

According to Abolade (1998) and Abraham (2013), the chalkboard holds significant value as a teaching aid due to its various benefits.

1. The mirror serves as a medium via which students gain insight into the teacher's cognitive processes, such as their methods of explanation, illustration, and overall

teaching approach. Therefore, it serves as a visual testament to the teacher's labour and artistic expression.

2. This technology allows the instructor to create visual representations, make adjustments, and provide corrections in real-time.
3. The utilisation of visual aids, such as drawings and writings, serves to capture the learner's attention and focus on the key components of a lesson. This engagement helps to sustain the learner's interest and involvement as they observe information being visually represented.
4. The utilisation of this tool allows the instructor to meticulously document the progression of the class, so enabling the learners to visually comprehend the subject matter and create a lasting record of it inside their personal notebooks.
5. Additionally, this feature allows the instructor to comprehensively evaluate the entire session in a systematic manner, thereby enhancing the learning experience for the entire class.
6. This feature allows the instructor to document oral information, so strengthening the effectiveness of verbal explanations through visual representation.
7. Preparing chalkboard work in advance can be beneficial for teachers as it allows them to save time. This method is effective in situations where portable chalkboards are available or when the classroom is not shared with other educators.

Here are few reasons why chalkboards still matter in the classroom these days;

1. **Accessibility:** In numerous developing nations, the prevalence of chalkboards surpasses that of whiteboards due to their greater accessibility. Chalkboards are widely used in educational settings because to their comparatively lower operational expenses in comparison to marker boards or glass boards. In addition, it should be noted that chalk is more cost-effective in comparison to markers.
2. **Penmanship:** There is a prevailing belief among individuals that the quality of penmanship is notably higher when it is executed on a chalkboard. Chalkboards are frequently equipped with lines, particularly during the initial stages of pupils' writing development, to serve this specific function. Penmanship is of greater significance in some languages. Japanese, Chinese, and Korean are representative instances of languages characterised by complicated characters, wherein penmanship plays a significant role in the visual manifestation of the written word. According to Cheng and Tang (2010), Chi Kin Tam, a regional sales manager for Poly-Vision in Hong Kong, has noted that this factor is a primary explanation for the continued utilisation of chalkboards in educational settings. One additional primary rationale for favouring the use of chalk in the Chinese market is the belief that it offers a superior medium for showcasing Chinese calligraphy. The Chinese letters exhibit a greater degree of thickness, and the act of writing with chalk on a chalkboard serves as a more faithful emulation of the ancient practise of writing with a brush. This is particularly evident in the context of a classroom, where a chalkboard equipped with sliding panels is commonly employed.
3. **Tactile Nature:** When writing, the tactile sensation of chalk is reminiscent of that of a pen or pencil. Due to this rationale, a significant number of educators exhibit a preference for employing chalk as opposed to markers for writing purposes. One argument cited by the author is the utilisation of chalkboards by instructors in India. Teachers in educational institutions tend to opt for using chalk as their preferred writing tool due to the subjective factors of writing experience and tactile sensation. Additionally, the act of underlining and tapping the chalk on the board serves to emphasise particular topics.

4. **Dust-free Chalk:** Frequently, individuals associate chalkboards with the pervasive clouds of dust that permeated the atmosphere during the process of eradicating content from the board. In contemporary times, due to heightened apprehensions regarding the well-being and respiratory conditions, such as asthma, among young children, an increasing number of manufacturers have commenced the production of chalk that is devoid of dust particles. According to Makkar (2021), the inclination towards the use of chalk in India continues to experience a steady increase. According to Tam (2017), there is agreement with the viewpoint expressed by Makkar (2021) that the presence of dust generated by traditional chalk in the classroom poses challenges, prompting the market to explore alternatives such as dustless chalk or liquid chalk.
5. **Nostalgia:** The mention of a chalkboard evokes a traditional academic environment for several individuals, wherever the surface is adorned with a wealth of information encompassing mathematical equations and philosophical concepts. The sentimentality associated with bygone eras is a significant factor that motivates numerous lecturers to continue employing traditional chalkboards. The manner in which individuals acquired knowledge and the approach they like for imparting knowledge align. Based on the following five rationales, it becomes evident that whiteboards have not displaced chalkboards in educational settings. Chalkboards possess contemporary attributes, such as a diverse selection of colours, sizes, and dust-free chalk, which enable them to provide contemporary and collaborative learning settings in classrooms globally, while also preserving a sense of historical significance [6].

Chalkboards as Instructional Media (Aid)

There are some ways to use chalkboard as a teaching aid:

1. The chalkboard is a readily accessible teaching resource that can be utilised for the presentation of new lessons.
2. The chalkboard serves as a valuable tool for presenting systematic answers to various mathematical issues.
3. The use of a blackboard facilitates teachers in delivering lessons that are well-prepared and structured, allowing for both formal presentations and informal discussions that students can comprehend and engage with on various topics.
4. The instructor uses the chalkboard as a medium for transcribing the pertinent information pertaining to the subject matter. In order to ensure the clarity of the lesson's ideas, it is important to progress from factual information to conceptual understanding, and from cognitive learning to affective learning.
5. Educators possess the ability to employ a diverse range of coloured chalk or pens in order to illustrate concepts on the chalkboard, so facilitating topic development, highlighting certain components, or establishing associations.
6. Educators have the ability to utilise a chalkboard as a visual aid to depict a step-by-step breakdown of a lesson through the use of diagrams, charts, and other illustrative methods.
7. The utilisation of a chalkboard has the potential to enhance students' cognitive capabilities by directing their attention towards the chalkboard and facilitating the visualisation of their own ideas.
8. The chalkboard can be utilised to enumerate the thoughts or topics proposed during a debate. Educators possess the ability to incorporate, remove, or finalise instructional materials.
9. The utilisation of chalkboards facilitates students in engaging in practise exercises and receiving prompt feedback from both teachers and peers.

10. The students have the ability to utilise mini-chalkboards in conjunction with observing the teacher in order to provide their own responses. Abie (2019) and Bostrom and Lassen (2006) [7].

Disadvantages of Chalkboard

It is not possible to preserve the written or visual content that is shared on the board. Individuals with a shorter stature may have limitations in their ability to effectively utilise the chalkboard to its fullest extent. Reading the lettering on chalkboards poses challenges in low-light conditions. The use of chalkboards is not suitable in environments with low lighting conditions and is not conducive for pupils with visual impairments. The representation lacks the ability to depict motion when engaging in the analysis of a process.

Improper usage of a chalkboard might lead to misconceptions or misunderstandings. The utilisation of chalkboards can result in untidiness or soiling. The characteristic of a chalkboard is that the information inscribed on its surface is impermanent. It is not feasible to depict maps, chemical operations, mathematical formulas, and intricate diagrams on a traditional board. Chalk generates particulate matter, leading to adverse health effects such as allergies and asthma. Chalk sticks have been found to possess a propensity for breakage, hence giving rise to a multitude of issues [8].

Meaning and Nature of Charts

A chart is a visual tool used to display data through the use of symbols, such as bars in a bar chart, lines in a line chart, or slices in a pie chart. A chart is a graphical representation that can depict numerical data in a tabular style, display functions, or illustrate many types of qualitative structures, hence conveying diverse sets of information. The term "chart" encompasses several interpretations as a visual depiction of data [9].

1. A data chart is a visual representation that effectively organises and communicates a collection of numerical or qualitative data in the form of a diagram or graph.
2. Maps that are embellished with additional information, known as map surrounds, for a specific purpose are sometimes referred to as charts. Examples of charts are nautical charts and aeronautical charts, which are typically distributed throughout multiple map sheets.
3. Other constructs that are peculiar to a particular domain are occasionally referred to as charts. For instance, in music notation, there is a chord chart, and in the context of album success, there is a record chart (Bonk & Cummings, 1998).

A chart can assume several forms, although it possesses common attributes that enable it to derive significance from data. In general, graphical representation is commonly employed to depict data in a chart due to the human capacity to derive meaning more expeditiously from visual elements compared to textual information. Text is mostly utilised for the purpose of providing annotations to the underlying data. The title of a graph holds significant importance as it serves as one of the primary functions of textual content within the graph [10]. According to Ashton and Teles (1999), the title of a graph is typically positioned above the primary visual representation and serves as a concise explanation of the subject matter depicted by the data.

Axes are commonly used to represent dimensions in data visualisation. When employing a horizontal and vertical axis in a graphical representation, it is customary to designate them as the x-axis and y-axis, correspondingly [11]. Each axis of the graph will be assigned a scale, which is shown by periodic graduations and often accompanied by numerical or category markers. In general, it is customary for each axis to include a label that is positioned outside or adjacent to it, providing a concise description of the dimension

being depicted. In cases when the scale is numerical, it is common practise to include the unit of measurement in brackets as a suffix to the label [12].

An illustrative instance would be the utilisation of "Distance travelled (m)" as a customary label for the x-axis. This label signifies that the horizontal position of the data inside the chart is associated with the distance travelled, measured in metres. The graph may contain a grid of lines that serve the purpose of visually aligning the data. The visual prominence of grid lines can be increased by strategically highlighting them at regular or notable intervals. The lines that are given greater emphasis are referred to as major grid lines, while the remaining lines are considered minor grid lines [13].

The presentation of data in a chart can vary significantly, including several formats. Additionally, textual labels may be used to provide specific descriptions of the data points corresponding to the specified positions within the chart. The data can manifest as discrete points or geometric figures, either linked or unlinked, and in various permutations of hues and designs. Additional inferences or points of interest can be superimposed directly onto the graph, so enhancing the extraction of information. When a chart has numerous variables, it is common to include a legend, often referred to as a key, to provide an explanation of the data [14].

The caption of a chart comprises a comprehensive enumeration of the variables depicted inside the graphical representation, accompanied by an illustrative instance showcasing their visual representation. This information facilitates the identification of data associated with each variable in the chart. A graph or chart can be described as a visual representation of data. An illustrative method employed by a utility provider involves the utilisation of a column chart to facilitate the visualisation of energy consumption by customers during the course of the preceding billing cycle. A bakery may employ a pie chart as a visual representation to illustrate the proportion of bread sales in relation to other products offered, such as cheesecakes and apple pies [15].

Types of charts

According to Mandah (2016) and Ogunyemi (2017), there exist various commonly utilised charts for the purpose of presenting instructional material.

1. A flowchart is a visual representation that aids in the organisation and sequencing of steps, decisions, or activities involved in a process, spanning from its initiation to its conclusion. Multiple starting points or endpoints are frequently incorporated, showcasing diverse pathways that can be pursued within a given process, facilitating progress from initiation to completion. Flowcharts are frequently utilised by individuals to visually represent intricate scenarios. Special forms are employed to visually represent distinct components of the process, accompanied with a tale that elucidates the significance of each shape.
2. A pie chart is a graphical representation that illustrates the various components of a whole entity. The visual representation exhibits a circular shape that is partitioned into multiple segments, resembling the division of a pie into individual slices. The sizes of the components vary depending on their respective proportions to the entirety they represent. Typically, every individual component is accompanied by a designation that signifies its relative worth in relation to the entirety. Pie charts are commonly employed by professionals in business presentations as a means to illustrate various aspects such as population groupings, market research answers, and budget allocations.
3. A Gantt chart is a visual representation of project schedules, depicting project tasks as bars on a vertical axis. The horizontal axis represents the timeframe of the project, which can be measured in days, weeks, months, or years. In some cases, a vertical line is included to indicate the current date. Gantt charts are commonly employed by project managers to track the progress and completion status of individual tasks.

4. The waterfall chart is a graphical representation that depicts changes in values over a specific period. It effectively illustrates the extent of variations occurring over time. The demonstration encompasses both the positive and negative effects of many elements on an initial value, specifically an opening balance. Waterfall charts serve as valuable tools for visually representing financial information, conducting profit and loss analysis, and facilitating earnings comparisons. This graphic can be utilised to emphasise the disparity between the allocated budget and the actual expenditure. In many cases, a colour code is employed to visually represent the ascending or descending nature of positive and negative values, which are indicative of the progression or regression resulting from a sequence of temporal modifications.
5. A gauge chart is a type of data visualisation that represents information by displaying it as a reading on a dial. These visual representations indicate the position of a particular data point relative to the lower and upper bounds of a given range. The needle serves as a representation of the numerical value on a scale. Gauge charts are commonly employed by individuals to visually represent metrics such as speed, revenue targets, and temperatures.
6. A funnel chart is a visual representation that effectively demonstrates the progression of values over many stages. The objects in question have a wider width at their uppermost region and a narrower width in their lowermost region. Funnel charts are particularly advantageous in the context of monitoring and analysing a sales process. Moreover, they are effective in illustrating website traffic patterns, encompassing metrics such as visitor count, page views, and file downloads. Funnel charts are frequently employed for order fulfilment purposes, as they effectively depict the quantitative aspects of orders, including the quantities of orders placed, cancelled, and delivered.
7. The bullet chart is a useful tool for assessing the progress and achievement of a certain objective or target. Certain bullet charts, particularly those illustrating revenues, exhibit ambitious aims. Some individuals or entities have set relatively modest goals, such as those related to showcasing expenditures. Bullet charts are frequently employed in dashboards as a means of visually representing the advancement of key performance indicators (KPIs). The bullet chart is a graphical representation that has resemblance to a bar graph, comprising three distinct components:
 - a. A line showing the target value
 - a. A center bar showing the actual value
 - b. Colored bars showing performance indicators [16]

Charts as Instructional Media

A chart serves as an effective tool for facilitating instruction. The incorporation of the environment into the classroom setting is achieved indirectly through this approach of teaching. Rather than physically seeing the actual fields where a lecture takes place, a chart might be utilised in the classroom to provide learners with a visual representation of the scenario. The objective of this endeavour is to actualize the theoretical knowledge into practical application. According to Okon (2015), it enhances the process of delivering presentations in an academic setting. A chart serves as a valuable tool for the presentation and visualisation of information or instructions, particularly within an educational setting such as a classroom. The breadth of visual aids might vary from a comprehensive wall chart to a singular sheet of paper [17].

Disadvantages of Charts

Lack of precision; One drawback associated with the utilisation of charts is that, due to their inherent design, charts are prone to being less exact compared to the original raw data. The chart would consist of numerical data that is quite accurate [18]. Nevertheless,

the conversion of said information into a graphical representation, such as a chart, results in a reduction in the level of detail and precision associated with said information. A bar graph is capable of providing a rapid visual representation of the extent to which one category surpasses another. However, the precise magnitude of this difference may not be as readily discernible as it would be when examining the original data [19].

Simplicity; Onu-Chika (2021) and Onyeukwu (2017) have noted that charts possess a drawback in that they have the potential to oversimplify information, hence diminishing the visibility of its more intricate components. A chart enhances visual appeal and effectively highlights important aspects of the data, although by selectively emphasising specific qualities. Although charts are effective at visually representing data in specific ways, their limitations arise when attempting to emphasise different aspects of the data that fall outside its intended design [20].

4. Conclusion

In conclusion, the use of chalkboards and charts in educational settings highlights their enduring significance as instructional tools, with chalkboards fostering collaborative learning and charts enhancing the comprehension of complex data. The analysis underscores the adaptability of chalkboards, which remain integral to many educators despite advancements in digital tools, and the utility of charts in presenting categorized or time-series data effectively. These findings imply the need to balance traditional and modern instructional aids to cater to diverse educational contexts and learner needs. Future research could explore the comparative effectiveness of traditional and digital visual aids across various disciplines and educational levels, as well as the integration of emerging technologies to further enhance learning outcomes.

Recommendations

In view of the enormous importance of charts and boards in the field and pedagogy, the researcher recommended thus; the local, state and federal government of Nigeria should ensure the availability and proper utilization of chalkboards and chats as the continue to be significant in the absence or ineffectiveness of the innovative classroom environment especially in the rural non-urbanized communities of Nigeria.

Classroom instructors should not discard their chalkboards and instructional chats as these can importantly ser as improvisation and active alternative during power failures and insufficient funds for the acquisition and utilization of computer based and internet oriented instruction. Students should be exposed to the basic existence and uses of Chalkboards and charts as educational media hence it is said that we learn from the known to the unknown, and from the common the uncommon.

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