

EVALUATION OF POSTERS AS EFFECTIVE INSTRUCTIONAL TOOLS FOR ENHANCING HEALTH EDUCATION IN PUBLIC PRIMARY SCHOOLS IN SABON GARI, NIGERIA

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Abstract

Inadequate and outdated instructional materials have impeded the effective teaching of health education in many Nigerian public primary schools. This study, was conducted to assess instructional posters aimed at improving pupils' understanding and performance in health education. The study employed a combination of survey and quasi-experimental research designs. The target population consisted of sixty-two (62) public primary schools in Sabon Gari Local Government Area, with a total of 13,367 pupils and 1,778 teachers. Using simple random sampling, six schools were selected for the quasi-experimental phase, while five schools were chosen for the survey. Data collection involved questionnaires and performance tests. A total of 125 questionnaires were administered. Findings indicated that the current instructional materials for teaching health education are largely ineffective and fail to engage learners. However, the posters developed for the study—designed based on core principles and aligned with the health education curriculum—were found to be successful. Pupils taught with these posters significantly outperformed their peers who were taught without them. The study concludes that visually designed posters are more effective instructional tools for health education than the traditional materials presently in use. It recommends that the government and relevant stakeholders invest in the renewal and development of instructional materials, involving professional graphic designers. Teachers should be encouraged to adopt such materials to foster interactive and learner-centred health education.

Keywords: Instructional Posters, Health Education, Public Primary Schools, Teaching Aids, Educational Innovation.

Introduction

Instructional materials are important resources which facilitate effective teaching, promote active student engagement and enhance learning success. Lately, the debate over education draws attention to the fact that the use of traditional, teacher-centred, and especially oral teaching, is not able to address the needs of the learners of the 21st century (Okafor & Musa, 2021). Instructional materials help to transform the theoretical concepts into practical knowledge by simplifying complicated ideas, keeping the learners interested, and enhancing memorisation.

As Adedeji and Ibrahim (2022) opined, the use of instructional materials like posters, charts, models, videos, and pictures is instrumental in the more interactive and memorable nature of the lessons. They offer a real-life situation, facilitate critical thinking, and support the practice of skills and attitudes that are gained during lifelong learning. In particular, instructional tools that can be visual engage all the senses and provide uniform reinforcement, thus increasing the quality of the learning process.

The posters have been historically utilised as effective communication and educational instruments for more than a century. In the late 19th and early 20th centuries, posters were

widely used in educational and public health campaigns where the speed and efficiency of spreading information to many people with minimal effort were needed. Indicatively, posters helped to inform the masses on the hygiene aspects, disease prevention and civic responsibilities during global health campaigns and mobilisation efforts during war. Their visual accuracy and capability to deliver short messages made them especially useful in addressing the population with different degrees of literacy. Gradually, the teaching industry has embraced the use of posters in classrooms as instructional resources because of their cheapness, permanence, and capacity to support the learning principles with diagrams. Posters are also still applicable in modern education as a visual reinforcement method that facilitates the delivery of the curriculum and interaction between learners.

Primary education Health education is designed to give the child essential knowledge, attitude, and practices to promote personal hygiene, a clean environment, disease prevention, and wellness. Schools are good platforms for health interventions, particularly at the basic level where lifelong habits are made. According to Adeyemi and Olorunfemi (2023), an effective health education programme that is properly designed and aided by visual teaching aids can prevent diseases in childhood and create awareness of health issues among the young population of learners.

As a means of graphic instructions, posters can influence the effectiveness of health education considerably. They are attractive in appearance, simple to digest and can convey important messages within a short time. Posters can also be used to support topics taught in the classroom, enhance interest and bring about behavioural change among students when well-planned and designed to correspond with the content taught at school (Nwachukwu & Bello, 2024). They are inexpensive, reusable, easy to use, and effective enough to make them an effective solution in resource-constrained public primary schools.

In most classrooms in Sabon Gari Local Government Area, there are either too few posters or none whatsoever, whereas posters are already known to be an effective teaching tool. The disparity between the identified advantages of posters and their minimal use in health education is the foundation of the given research. Due to the pressing necessity to improve the quality of instruction in health education, the paper investigates the design and testing of posters as an efficient means of teaching in the local primary school in the Sabon Gari Local Government Area, Kaduna State.

The statement of the problem ascendant that, although the significance of instructional materials in primary education is acknowledged, the health education in the public primary schools in Sabon Gari LGA is being delivered with regard to old, poor and irrelevant teaching materials. It is observed that even now, most schools use outdated aids such as skeletal models to educate a broad spectrum of health-related issues - aids which cannot adequately cover the fundamental problems of hygiene, nutrition, and personal well-being (Ibrahim & Tanko, 2021).

This inappropriate instructional support has led to the low level of learner engagement, poor understanding and weak retention of key health-related information. Moreover, the accessible material is not visually engaging and is also incompatible with the existing health education syllabus, making it difficult to implement effective lessons and encourage students to adopt sustainable health-promoting behaviours (Eze & Adamu, 2022).

Despite the historical effectiveness of posters in terms of visual communication as a means of educating and raising awareness about health issues, their methodological formulation and

application in the context of health education classes in Sabon Gari LGA have not been thoroughly studied. Such a lack of systematic, functional, and context-specific instructional posters poses a considerable gap in instructing pupils, which could be causing poor performance and low health awareness among pupils.

Accordingly, the research problem of the given paper is the lack of effective, interactive, and curriculum-sensitive instructional posters to teach health education in the primary schools of Sabon Gari LGA. The proposed research intends to design, develop, and test posters, which may increase the interest, understanding, and performance of pupils regarding health education.

Two Objectives were developed for the study. One, to identify the key factors that influenced the design and development of instructional materials for teaching health education in public primary schools in Sabon Gari Local Government Area. secondly, to evaluate the effectiveness of the developed poster-based instructional materials in enhancing the teaching and learning of health education in public primary schools in Sabon Gari Local Government Area. The objectives were restructured as research questions thus are as follows; what are the factors that determined the design and development of instructional materials for teaching health education in Sabon Gari Local Government Area? And how effective are the developed health education instructional materials?

Relevance and Use of Graphics as Instructional Materials in Health Education

Visual instructional materials, particularly graphics, play a central role in effective teaching and learning. Their relevance lies in their ability to enhance memory retention, simplify complex ideas, and promote engagement among learners. Graphics serve various instructional functions—descriptive, functional, algorithmic, data display, and logical-mathematical—which support critical cognitive processes and aid in building mental models essential for problem-solving and higher-order thinking (Nwachukwu & Bello, 2024).

Instructional graphics, such as posters, charts, and diagrams, offer visual reinforcement of content. They help learners make sense of relationships, observe patterns, and retain key information, particularly when aligned with instructional goals. In health education, such tools promote better understanding of concepts like personal hygiene, nutrition, and disease prevention among primary school pupils.

A wide range of instructional materials is commonly used in teaching health education, including textbooks, charts, radio, television, slide projectors, and computers. Each medium offers unique advantages. For instance, television combines audio and visual stimuli for longer retention, while computers facilitate individualised and group learning through interactive content. However, for resource-constrained environments like Sabon Gari, posters and charts stand out as cost-effective, durable, and impactful tools that are easy to produce, display, and reuse.

The importance of instructional materials cannot be overstated. They make learning more accessible by appealing to multiple senses, fostering attention, enhancing clarity, and aiding in the retention of knowledge. Visual materials particularly support learners with diverse learning styles and simplify abstract or technical health content. Instructional materials also serve as motivational tools, helping to bridge gaps in understanding and making learning more enjoyable (Adebayo & Ibrahim, 2022).

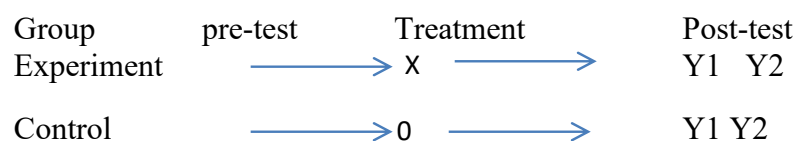
For instructional materials to be effective especially posters, they must exhibit key **characteristics** such as clarity, simplicity, attractiveness, visibility, flexibility, and accuracy. Materials should be appropriate, free from distractions, and designed to suit specific lesson objectives. Colour use, lettering, and layout must support, not hinder, the learner's ability to focus and understand the key message being communicated (Okafor & Musa, 2021).

Given the scarcity of updated visual resources in Sabon Gari's public primary schools, the development and use of well-designed posters offer a practical solution to improve the quality of health education delivery. Posters are not only visually engaging but also functionally relevant for explaining core health concepts in a clear and relatable manner.

Methodology

This study utilised a mixed-method approach that combined survey research designs and study-based approach to evaluate the development and effectiveness of posters as instructional tools in health education. The quasi-experimental component involved a non-equivalent control group, which included pre-tests and post-tests administered to both the experimental and control groups. The experimental group received instruction using the developed posters, while the control group was taught without the instrument.

Illustrations of the non-equivalent group design



Where:

Y1 stands for pre-tests

X stands for treatment (Used Developed Poster Instructional Material), 0 stands for non-treatment (without developed Poster Instructional Material), Y2 stands for post-test.

A total number of 336 pupils participated, selected from six public primary schools through simple random sampling. In addition, the survey design involved administering structured questionnaires to 125 teachers across five schools to determine their opinion perspectives on the availability, relevance, and effectiveness of health education instructional materials. The data collection instruments included a researcher-designed questionnaire and a Health Education Performance Test (HEPT). The questionnaire comprised 17 closed-ended items, rated on a modified 4-point Likert scale, focusing on various aspects of instructional material usage. The HEPT assessed the pupils' academic performance before and after exposure to the poster-based instruction.

To ensure content validity, experts from the Department of Industrial Design at Ahmadu Bello University, Zaria reviewed the materials. A pilot study conducted at Biya Primary School yielded a Cronbach's Alpha reliability coefficient of 0.769, indicating acceptable internal consistency. Data collection occurred over six weeks with assistance from trained health education teachers, who facilitated instruction and assessments. Permissions were obtained from the relevant educational authorities to access the involved schools. The entire process was

carefully coordinated to ensure consistency in instructional delivery and data collection across both the experimental and control groups.

Data Presentation, Analysis and Discussion

A total of 125 copies of the questionnaire were administered to teachers across five (5) selected public primary schools in Sabon Gari Local Government Area of Kaduna State. All 125 copies were properly completed and returned, resulting in a 100% response rate.

In addition, a total of 336 pupils participated in the quasi-experimental aspect of the study. The pupils were assigned into experimental (165) and control (171) groups.

Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to answer the research questions, while independent sample t-test was used to determine whether a significant difference existed between the mean scores of pupils in the experimental and control groups.

Table 1: Demographic Characteristics of Teachers

Variable	Category	Frequency	Percentage
Age Range	18–27 years	27	21.9
	28–37 years	44	35.2
	38–47 years	30	24.0
	48 years and above	24	19.2
	Total	125	100
Educational Qualification	SSCE	16	12.8
	ND/NCE	44	35.2
	HND/Degree	47	37.6
	Postgraduate	18	14.4
	Total	125	100

Table 1 presents the demographic distribution of the teachers who participated in the study. The age distribution shows that 27 teachers (21.9%) were between 18–27 years, 44 teachers (35.2%) were between 28–37 years, 30 teachers (24.0%) were between 38–47 years, while 24 teachers (19.2%) were 48 years and above. This indicates that the majority of respondents were within the 28–37 age bracket, suggesting that most participants were in their active professional years. The spread across all age categories shows adequate representation of both younger and more experienced teachers.

Regarding educational qualification, 16 teachers (12.8%) possessed SSCE, 44 (35.2%) had ND/NCE qualifications, 47 (37.6%) held HND or Degree certificates, and 18 (14.4%) possessed postgraduate qualifications. The data reveal that the majority of respondents were degree holders or above, indicating that the teachers had sufficient academic background to provide reliable responses concerning instructional materials in health education.

Responses to Research Questions

Research Question 1 What are the factors that determined the design and development of instructional materials for teaching health education in Sabon Gari Local Government Area?

The factors that determined the design and development of posters as instructional materials are as follows:

1. **Curriculum:** Curriculum is a standards-based sequence of planned experiences where students practice and achieve proficiency in content and applied learning skills. Curriculum is the central guide for all educators as to what is essential for teaching and learning, so that every student has access to rigorous academic experiences. This study evaluates instructional material develop in line with the curriculum.
2. **Element of Design:** The elements of design are the fundamental aspects of any visual design, which include: shape, colour, line, and texture. Graphics Designers use the elements of design to create an image that can convey a certain mood, or evoke a number of feelings. Two instructional materials developed were evaluated in consideration of the elements used
3. **Principles of Design:** The principles of design are the rules a designer must follow to create an effective and attractive composition. There are six basic principles of design: Contrast, Balance, Emphasis, Repetition, Rhythm, Unity, Space, Form and value. These principles were also subjected to evaluations.
4. **Content Relevance:** Ensure that the content displayed on the poster aligns with the learning objectives and desired outcomes. The information should be accurate, up-to-date, and appropriately targeted at the intended audience. The content relevance was also evaluated.
5. **Visual Appeal Design:** visually appealing posters that capture attention and engage learners was evaluated. This use attractive colours, appropriate fonts, and clear visual hierarchy to organise information effectively. Incorporate relevant images, graphics, and illustrations to enhance understanding and retention.
6. **Clarity And Simplicity:** this is the skill presenting information in a concise and understanding manner by use of clear and simple language, avoiding jargon or complex terminology. Ensure that the key message is communicated effectively and that the poster is not overcrowded with excessive text or cluttered images.
7. **Organizational Structure:** this is the skill presenting organise the content in a logical and structured way, using headings, subheadings, bullet points, and other formatting techniques. This helps learners navigate the poster easily and grasp the message quickly and effectively.
8. **User-Friendly Design:** this is the consideration of the physical attributes of the poster, such as size, readability from a distance, and accessibility for learners with different needs, including individuals with visual impairments or learning disabilities.

POSTERS USED FOR EVALUATIONS



Plate I: First Aid
Source: Field Work

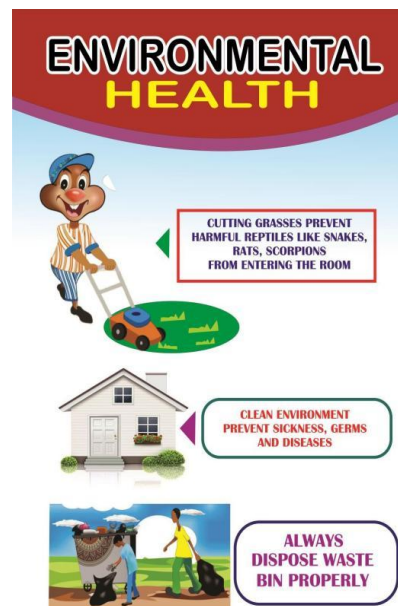


Plate II: Environment Health
Source: Field Work



Plate III: Breast Feeding
Source: Field Work

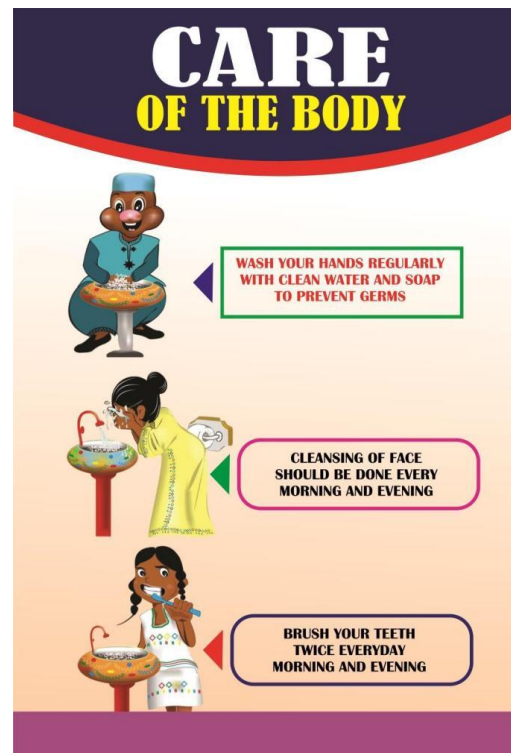


Plate IV: Care of Body
Source: Field Work

Research Question 2: How effective are the developed health education instructional materials?

The opinions of the respondents on the effectiveness of the instructional materials developed for teaching health education in public primary schools in Sabon Gari Local Government

Table 2: Pupils' Group Assignment and Mean Performance

Group	Frequency	Percentage	Mean Score	SD
Experimental Group	165	49.1	39.13	1.119
Control Group	171	50.9	35.37	1.103
Total	336	100	—	—

Table 2 shows the distribution of pupils into experimental and control groups. A total of 165 pupils (49.1%) were assigned to the experimental group, while 171 pupils (50.9%) were assigned to the control group. The experimental group recorded a mean score of 39.13 with a standard deviation of 1.119, whereas the control group recorded a mean score of 35.37 with a standard deviation of 1.103. The higher mean score of the experimental group suggests that pupils who were taught using the developed poster-based instructional materials performed better than those taught using conventional methods. The relatively low standard deviation values in both groups indicate that pupils' scores were closely clustered around their respective means, suggesting consistency in performance within each group. This result implies that the use of instructional posters positively influenced pupils' academic achievement in Health Education.

Table:3 Teachers' Responses on the Effectiveness of the Developed Instructional Posters

S/N	Items	SA	A	D	SD	Mean	SD
1	The visual images presented are relevant to the topic of study	50	51	19	8	3.08	.539
2	Bright colours effectively attract children's attention	76	29	17	6	3.38	.558
3	The text is legible and stimulates learners' attention	84	41	2	1	3.57	.843
4	The instructional materials are simple and easy to understand	47	63	14	4	3.31	.839
5	Captions and written communication align with the curriculum	46	65	13	4	3.41	.878
6	The materials used for production are durable	40	75	8	5	3.18	.626
Cumulative Mean						3.32	

Benchmark: Mean>2.5=Agree; Mean<2.5=Disagree

The table presents teachers' responses regarding the effectiveness of the developed instructional posters for teaching Health Education in public primary schools. The cumulative mean score of 3.32, which is well above the criterion mean of 2.50, indicates that teachers generally agreed that the developed posters were effective instructional tools. The relatively low standard deviation values across the items suggest that respondents' opinions were consistent, with minimal variation. Item 1 shows that the visual images presented were relevant with a mean score of 3.08 and a standard deviation of 0.539. A total of 101 respondents (SA + A) agreed with this statement, while only 27 disagreed. This indicates that the images used in the posters were appropriate and aligned with instructional content. Item 2, which examined the effective use of bright colours to attract children's attention, recorded a mean of 3.38 (SD = 0.558). A majority of respondents (105 out of 125) agreed with the statement. This suggests that colour selection in the poster design successfully enhanced visual appeal and learner

engagement. Item 3 recorded the highest mean score of 3.57 (SD = 0.843), indicating strong agreement that the text used in the posters was legible and capable of stimulating learners' attention. With 125 respondents agreeing and only 3 disagreeing, this implies that clarity and readability were major strengths of the developed materials. Item 4 assessed whether the instructional materials were simple and easy to understand. It recorded a mean score of 3.31 (SD = 0.839), with 110 respondents in agreement. This suggests that the posters were designed in a learner-friendly manner, making the health concepts accessible to primary school pupils. Item 5 examined alignment with the Health Education curriculum and obtained a mean of 3.41 (SD = 0.878). A total of 111 respondents agreed that captions and written communication were curriculum-aligned. This confirms that the posters were not only visually appealing but also academically relevant. Item 6 evaluated the durability of the materials used for production and recorded a mean of 3.18 (SD = 0.626). With 115 respondents agreeing, this indicates that the posters were produced using quality materials suitable for long-term classroom use.

Findings of the study

The findings of the study revealed that:

- i. The visual images presented are relevant to the topic of study, bright colours that attract children attention have been effectively utilized in the poster, the use of text are legible enough to stimulate senses by attracting the attention of the learners, the instructional materials developed is simple and easy to understand by the learners, the captions and other written communication were well represented in line with Health Education curriculum, and the quality of material used for the production of the posters is durable to last for years
- ii. The Pupils taught using the developed instructional material performed better when compared with the ones taught without the developed instructional material in Health Education.

Summary of Findings

The findings of this study revealed that several factors influenced the design and development of instructional materials for teaching health education in public primary schools in Sabon Gari Local Government Area. It was observed that the existing instructional materials were inadequate, outdated, and not aligned with the health education curriculum. These findings support the views of Yusuf (2022), who emphasized that many public primary schools in Nigeria lack contextually relevant teaching materials that meet modern instructional standards. Similarly, Kay (2021) affirmed that the absence of well-structured and updated instructional aids can hinder learners' engagement and achievement.

Furthermore, the study showed that the posters developed as instructional materials significantly improved pupils' learning outcomes. Pupils exposed to the developed posters demonstrated better comprehension, retention, and interest in health education topics compared to those who were not. This finding aligns with Savic (2020), who emphasized that instructional materials which stimulate visual and cognitive senses enhance understanding and long-term retention. It also supports the assertion by Adeniyi (2023) that when instructional materials are designed with simplicity, clarity, and relevance, they facilitate learner motivation and academic performance. In addition, the application of the ADDIE model in designing the posters is in agreement with Gustafson and Branch (2021), who highlighted that structured instructional design processes yield more effective learning tools.

Recommendations

Based on the research findings, the following recommendations are made:

- i. Primary school is the foundation upon which the child's future is laid. Therefore, government needs to renew or replace outdated instructional materials by deploying expertise (Graphics Designers).
- ii. Finally, Teachers should adequately use the developed instructional materials (posters) for effective teaching and learning in the class room.
- iii. The Instructional Materials used by Schools in the Study Area

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