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THE USE OF INSTRUCTIONAL MEDIA IN TEACHING AND LEARNING COMPUTER SCIENCE IN SECONDARY SCHOOLS IN KOGI STATE

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Abstract
This research sought to investigate the availability and utilization of instructional media in the teaching and learning of computer science in secondary schools in Nsukka Local Government Area of Enugu State. The study population consisted of computer science teachers and secondary school students in Nsukka Local Government Area of Enugu state. A total sample of 320 subjects were used for the study, comprising of 15 students from each of the schools, the survey research design was adopted for study. A questionnaire was used as the instrument for data collection. It was validated by the three experts in the field of science education and had a reliability index of 0.75. The instrument consisted of 16 items each of the research questions. The data which was collected was analyzed using simple frequency counts and the Likert scale. Results of the study revealed the lack of relevant instructional media for the teaching and the learning of computer science as well as the poor extent of utilization of these media during teaching. It also observed that there was no significant difference between the responses of the male and the female respondents. It therefore recommended that there is the need for al l the stakeholders including the federal, state and the private sector to contribute financially and materially in the provision of instructional media for the teaching and learning of computer science in secondary schools in Nigeria. there is urgent need for the organization of regular workshops, seminars, conferences etc for science teachers, head teachers and principals on the importance and current development and progress in the use of instructional media in teaching and learning of computer science in secondary schools and the school heads, principals and officials of the ministry of education should regularly supervise schools so as to ensure the adequate use of instructional media in the teaching of computer science.

Statement of the problems

The importance of computer science education to Nigeria in a progressively more competitive world makes it imperative that all that is possible is done to ensure the best instruction available. Many educators believe that the use of instructional media as a part of the teaching-learning process is superior to other pedagogies. This study is intended to determine the availability and extent of the use of the available instructional media in teaching and learning computer science in secondary schools in Nsukka Local Government Area of Enugu state.

Research Questions

1. To what extent are instructional media available for teaching computer science in secondary schools the study area?
2. To what extent are instructional media used in teaching and learning computer science in secondary schools in the study area?

Research Hypothesis

H_0: There is no significant difference between the male responses and the female responses on the utilization of instructional media in the teaching and learning of computer science in secondary schools.

What are Instructional Media?

Instructional media are important elements of teaching and learning activities. The term instruction according to Adekola(2008) is a deliberate arrangement of experiences within the learning space, classroom, laboratory, workshop etc aimed at helping learners to achieve desirable changes in behavior or performance. Media according to Vikoo (2003) is used to think about Television, satellite communication, computer and other sophisticated modern technologies. Attempt to precisely define instructional media generates diverse opinion among scholars. For instance, Gbamanja (1991) described instructional media as any device with instructional content or function that is used for teaching purposes, including books, supplementary reading materials, audio-visual and other sensory materials, scripts for radio and television instruction, program for computer-managed sets of materials for construction and manipulation. To Onyeozu (1997), instructional media are source materials which help to facilitate teaching and learning. The term instructional media as described by Adekola (2008)means all available human and material resources which appeal to the learners' sense of seeing, hearing, smelling, tasting touching or feeling and which assist to facilitate teaching and learning.

Instructional media are channels of communication through which information passes for usage in educational situation in conjunction with the instructor. It may include traditional materials such as chalkboards, handouts, charts, slides, overheads, real objects and videotapes or films as well as newer materials and methods such as computers, DVDs, CD-ROMS, the internet and interactive video conferencing.

Why Use Media in Instruction?

A good aid is like a window, it should not call attention to itself, and it should just let in the light. In general, you should use media whenever, in your best judgment it can facilitate learning or increase understanding of material. Of course, communicating to facilitate learning can be challenging process, often requiring creative efforts to achieve a variety of implicit instructional goals (University of Saskatchewan, n.d.).

As a rule, educational experiences that involve the learner physically and that give concrete examples are retained longer than abstract experiences such as listening to a lecture. Instructional media help add elements of reality- for instance, including pictures or highly involved computer simulations in a lecture.

Media can be used to support one or more of the following instructional activities:

- Gain Attention: A picture on the screen, a question on the board, or music paying as students enter the room all serve to get the student's attention.
- Recall prerequisites: use media to help students recall what they learned in the last class, so that new material can be attached to and built upon it
- Present objectives to the learners: Hand out or project the day's learning objectives.
- Present new content: Not only can media help make content more memorable, media can also help deliver new content (a text, movie or video).
- Support learning through examples and visual elaboration. One of the biggest advantages of media is to bring the world into classroom when it is not possible to take the student into the world.
- Elicit student response: Present information to students and pose questions to them, getting them involved in answering the questions.
- Provide feedback: Media can be used to provide feed-back relating to a test or class exercise.
- Enhance retention and transfer: pictures enhance retention. Instructional media help students visualize a lesion and transfer abstract concepts into concrete easier to remember objects.
- Assess performance: Media is an excellent way to pose assessment questions for the class to answer, or students can submit medical presentations as classroom projects.

Classification of Instructional Media

For effective usage of instructional media, they are often classified in to various classes, so that relevant media would be adopted for a particular situation. Though Nzeneri, (1996) advocated for classification of instructional media based on some criteria. Such criteria h noted include:

- The degree of expertise? Technical required for the production
- The nature of the material (Media)
- The physiological parameter or sensory modality required
- Whether or not projection is involved
- Place produced
- Miscellaneous characteristics

Classifying instructional media based on convenience, media can be classified into: Durable and Non-durable media.

Durable materials are those that last for very long time. Such include computer, projectors, television, radio, cameras etc

They are hardware and high technology materials. Non-durable media as the name implies are materials that are have short life span or those that cannot be stored for a very long time. These media include pictorial and graphic representations such as posters, maps, charts, etc; projected pictures such as films strips, transparencies, motion pictures, etc.

Audio-Visual Media: Media under this classification appeal to the sense of hearing and seeing. Examples include video, television, computer motion pictures, etc.

Print and Non-Print Media: Print media include books, newspapers, journals, pamphlets, etc while non-print media are maps, charts, postal, graphs etc.

Projected and Non-projected Media: The projected materials require other equipments especially projectors to functions. In most instances, they require electricity. Examples according to Nzeneri (1996) include slide and film strips, video cassette, transparencies, motion pictures, computer software, etc.

The non-projected media are those that do not require any other equipment to function. Materials like poster, flash cards, charts, pictures etc fall under this category. Based on the criteria, instructional media can be classified as low and high technology media, print and non-print media. Based on physiological criterion, Romiszowski (1995) classified media as shown in table 1 below.

Table 1: Classification of Media

Class of Media	**Sensory Channel**	**Instructional Media**
Auditory materials	Sense of hearing	Radio
Visual materials	Sense of vision	Still pictures
Audio-visual materials	Sense of hearing and vision	Television
Tactile materials	Sense of touch	Braille
Olfactory materials	Sense of smell	Some gases
Gustatory materials	Sense of taste	Foods
Kinesthetic Materials	Sense of muscular co-ordination	Games like football

Source: Adopted from Romiszowski in Vikoo (2003:140)

No matter the classification, the benefits of instructional media usage are not in any way hidden. Adekola (2008) summarized the benefits by saying that usage of instructional media increases the rate of learning by the learners, makes learning to be real and permanent, saves teacher's time which would have been wasted on oral presentation and explanation of subjects contents, promotes learners participation in learning activities, makes learning available to wider audience and helps teacher and learner overcome physical difficulties in teaching and learning. However, despite the enormous benefits of instructional media usage in the teaching learning situation, Usha (2003) observed that up till 1998 only 0.6% of Nigerian population own personal computer, 6.7% own television while only 14.6% own radio. Also, there are only 410 internet

host in the country. The statistics are presented by Usha (2003) revealed that majority of Nigerians lack access to electronic instructional media.

Types of Instructional media Used in the Teaching and Learning of Computer Science

Learning and teaching computer science needs a lot of patience, energy, time, creativity and competence. The success of the teaching and learning of this subject is determined by a number of factors such as the students, the teacher , the methods, materials and media or aids used.

There are many kinds of media which can be used by the teachers in the teaching learning process, but the teacher should be selective when choosing. The types of instructional media for teaching computer science are discussed below.

Computer laboratory

The computer laboratory is the most important instructional media in the teaching and learning of computer science. This is because it compasses all primary equipments/ appliances that are used in computer instructions. Examples include desktop computers, CPU, Ups, scanners, printers, photocopier, keyboard, CD-Rom etc. it is in the computer laboratory that the learners practicalise all the knowledge acquired in the classroom.

Charts

A chart is a combination of pictorial, graphic, numerical or vertical material which presents a clear visual summary.

Edgar dale defines charts as, "a visual symbol summarizing or comparing or contrasting or performing other helpful services in explaining subject-matter". The main function of the chart is always to show relationship such a comparisons, relative amount, developments, processes, classification and organization.

Uses of Charts

1. Motivates the students
2. Presents abstract ideas in visual forms
3. Summarizes information
4. Creates problems and stimulates thinking
5. Encourages utilization of other instructional media

Posters

Good's Dictionary of Education defines a poster as "a placard, usually pictorial or decorative, utilizing an emotional appeal to convey a message aimed at reinforcing an attitude or urging a course of action".

The poster can be defines as a graphic representation of some strong emotional appeal that is carried through a combination of graphic aids like pictures, cartoons lettering and other visual arts on a placard. It aims at conveying the specific message, teaching a particular thing, giving a general idea, etc. posters are a great influence on the observer.

How to Use Posters

Posters are very useful in students' project work. Divide the class into groups and each group can decide what message their post is going to have. The completed posters, together with the students' other project work, such as reports, can then be displayed around the school.

Graphs

Graph is defined as a visual representation of numerical data. Graph is fundamentally a tool for expressing number relationships, which is much easier to visualize than can be done if the statement were made in words and figures. It offers a judicious technique for analyzing, comparing and prophesying of facts which are vital to an intelligent study of a problem.

How to use Graphs

1. Awareness: The teacher should be well aware of the method of drawing of graph in a neat and accurate manner.
2. Neatness: The graph should be neat, clean and artistic. It should be good quality.
3. Accuracy: the scales and measurement of the graph should be accurate and intelligible to the students.
4. Drawing and paper: the graph should be properly drawn. The graph paper should be good. The pencil that is used should also be good.
5. Hints: The hints should be properly explained. The marks on the graph should be such that the students may know them by themselves.

Slides

Among the various types of materials available still projection, slides and film strips are the foremost visual aids. They are of great value in teaching. Slide Projector or Diascope popularly known as Magic Lantern, is an optical aid to the process of teaching. It is used for projecting pictures from a transparent slide on a wall or screen. It helps in showing the magnified image of the slide. When the figure or illustration is very small and it is required that the whole class should see it clearly, a transparent slide of this small figure is prepared. The slide is placed inverted into the slide carrier part of the magic lantern (slide projector). The slide projector projects its erect image on the wall screen by enlarging its dimension and making the vision more sharp and clear. If the slide or film strip is colored than it would be more attractive. The slide projector is useful for small as well as large groups.

Film Strips

It is an improvement upon the slide projector (magic lantern). The device may be used as a slide projector or as a film strip projector. Instead of using different slide for different topics or more slides for a topic, one strip or piece of still film is prepared. Slides produced on films are called film strips. A film consists of a strip of cellulose acetate film 16mm or 35mm wide and length 2 to 5 feet. It usually consists of 40 to 100 separate pictures related to a particular subject, topic or theme. These pictures may be connected with series of drawings, photographs, diagrams or combination of these. Such strip or piece of still films serves the same purpose as served by a number of slides.

There is not much difference between a slide projector and a film strip projector. In a slide projector we use separate slide while in a film strip, a strip of film (having ling strip of many slides) is exhibited. The film strip projector is a recent development and it is growing to be a more popular means of pictorial representation.

Overhead Projector (O.H.P)

The overhead projector has opened a new dimension in communication. It represents a lot of improvement over magic lantern, slide and filmprojectors.

The name ‘Overhead projector’ comes from the fact that the projected image is behind and over the head of the speaker/teacher. In overhead projection, a transparent visual is placed on a horizontal stage on top of light source. The light passes through this transparency and then is reflected at 90^0angle on the screen at the back of the speaker.

How to Use OHP

Step 1: Remember to plug in the OHP

Step 2: Pull the head mirror up completely. It is likely to break down if you move the head mirror up strongly.

Step 3: Turn on OHP. It is ready for use.

After use: Turn off power and remove the head mirror down. If out of focus, please adjust as follows. Turn the part of gray on head mirror to the right and left until focus is correct.

Work sheet

A work sheet lists questions or activities for students or trainees to work through. Pre-prepared worksheets can be used successfully with groups with differing abilities or languages skills because each person can work at their own pace.

How to use Worksheets
Worksheets can be used for homework or revision programme or they can include further details to be studied for the next lesion. They can be photocopied, or copies can be made using a jelly or Banda machine. In development work, worksheets can reinforce or remind trainees about a particular message or technique. Worksheets provide flexibility in the classroom as well as in the workshop, because they can be used individually, in pairs or in small groups to facilitate teamwork skills.

Models
A Model is a non-projected but three-dimensional visual aid. It has not only length and width but also has depth. Teachers show models to students instead of the real object. Model is used when there is impossible to show the real object to the class owing to its size or their inaccessibility. Models also provide the interior views of object whether its size would be smaller or larger. Furthermore, it may have almost the appearance and color except its size.
The model in one piece with its parts not moving is called the static model. However, if the parts of a model are detachable, the model is called sectional. A sectional model is helpful in explaining the function of each part and its relation to the whole object. For example: human eye, stream engine. However,teacher explains and demonstrates its working in the classroom.

Computer-assisted Instruction (CAI)
Computer-assisted instruction (CAI) is an educational medium in which a computer delivers instructional content or activities. It is also an interactive technique whereby a computer is used to present the instructional material and monitor learning that takes place. The level that the computer assists the learning process varies among programs. Students learn by interacting with the computer while using computer-assisted instruction. The computer analyses the students' responses and supplies proper feedback to the students. More advanced software packages adjust the level and direction of the instruction to best suit the individual user's needs.

The Chalkboard/Whiteboard
The whiteboard is one of the most basic forms of instructional media and is best used for emphasizing essential information and developing ideas as the class progresses.

- Put assignments due, the next assignment and due date and the day's lesion objectives on the board before starting class.
- Use the board to present a problem the class should be thinking about during the lecture.
- Use the board for graphics as well as text and formulas.

When using the Whiteboard

- Include a whiteboard plan in lesion outline that determines which aspects of the lesion will be illustrated on the board- list of concepts to be learned, timelines and outline for the day's presentation.
- Bring your own markers to class and carry plenty of spares.
- Use different coloured markers to highlight important aspects of the lesson.
- Write neatly and horizontally, making certain your handwriting is large enough for students to read. Board work should be organized so that students will be able to interpret their notes later.
- Write on the board in several places (top, bottom, right side, left side). Go to the back of the room to see if you can read what you have written from any location. Be sensitive to obstructions, including the heads of students, overhead projectors, etc that may block the lower part of the board.
- Give students time to copy what has been written
- Avoid modifying the board while students are coping information.

- Talk to the students, not the board. With a little practice, you will find that you can write will you are partially facing the class.

Textbooks
Various definitions of textbook emphasize the role of textbook as a tool for learning. Textbooks can be described as educational books written by scholars usually in a particular field or area of study to aid learners and teachers in the teaching learning process. Textbook is the nucleus of all the learning activities related to a particular curriculum. Certainly, a teacher is not a sufficient source of knowledge for a number of reasons such as the large class size and the time factor, etc. besides, students have to improve the knowledge received from the teacher by reading the textbook. Textbook plays a vital role in imparting knowledge to the students in the third world countires.

Video/Film
Using video or film in classroom instruction has the advantage of presenting abstract ideas in a realist context, which helps students grasp the abstract ideas more easily and to retain the material longer.

Examples of use:
Filming students 'in-class presentations and viewing the tape together offers students the opportunity of seeing themselves in action, students can watch an online video overview of how to use the components of a computer that was recorded by the instructor using Camtasia, a screen capture and recording software.

When using Video in the Classroom
- Do not show the entire tape/DVD if there is no need to do so. Think about why you are using the video and shoe only the applicable portions.
- Relate the video to what is being discussed in class and discuss relevance to every day issues or problems.
- Prepare a set of questions taken from the video that students might discuss or answer. Prepare students by providing an outline of the video's main points on the document camera, whiteboard or handout do that students know what to look for as they watch.
- Since video only presents a one-way flow of information, compensate for this lack of involvement by encouraging dialogues in other areas of the class such as group discussion.

When using Video Online
- Online video can be used for screen capture and recording, stimulations, demonstration of processes and other visual illustrations.
- Keep the length of the video short, no more than 3-5minutes and follow up with a set of questions or activity to be completed into hold students' attention and keep them on task. If the video is long, break it up into 2-5 minute modules for easier viewing with questions or points to consider in between.
- When using web-based media, be certain to inform students of general technical and computer requirements and provide links for downloading the necessary plug-ins and media players.

LCD Projectors
LCD's used with computer project an image onto a screen or black wall- and provides more instructional flexibility in the types of content that can be used in a classroom. Classroom support will train instructors on how to use the LCD Projectors as well as other classroom technology.

Advantages of LCDs
- Since slides are stored in files on the computer, they can be made accessible to students or other instructors.

- Presentations are easily made using PowerPoint or other software applications. PowerPoint can also be used to prepare handouts and content outlines.
- Some instructors post their PowerPoint slides to their course sites so that students may download them for study purposes.
- Connecting a videocassette player and document camera to the computer allows instructors to project videos or images directly from a bok to the screen through the LCD projector.

How to use the LCD Projector

Students prefer consistent presentation of information. Consider standardizing the usage of your LCD slides, keeping in mind the following:

- The opening slide might be the title or main theme of the day
- Subsequent slides might be key terms, discussion questions and important concepts
- Use slides to tell a story. Talk to the students, not at them.
- Involve the students in discussion of the visuals
- If you use slides regularly, the final or ending slide will become a signal to the student that class is over, with accompanying lack of interest and closure. Instead, use the last slide as a discussion device to allow students to synthesize information and bring closure to the topic.
- While using a standard series of slides, vary the layout and color for each lecture. All presentation software allows the choice of different backgrounds and color through the use of templates or master slides.
- Use sound clips, animations and clip art with discretion.

The Internet/ web

The internet is a specific inter-network. It consists of a worldwide interconnection of governmental, academic, public, and private networks. It is a form of instruction which grants access to information that cannot be acquired from textbooks or other educational materials within ones' reach. The internet as an instructional media is very powerful because it contains almost everything there is to know about "everything".

Flipchart

A Flipchart is a series of sheets of paper, fastened together at the top. When a sheet has been used, it can be "flipped" over the top so the next sheet can be used.

How to use a Flipchart

- It can be used with blank sheets of paper or newsprint, which the teacher or trainer writes on during the session.
- As a pre-prepared resource with pictures or notes. To avoid writing and speaking at the same time, you can prepare texts and drawings before the lesion or session. Each sheet of the flipchart should illustrate one point or message in a lecture.
- Turn to the next sheet when moving onto the next point. This helps the students to remember information easily.
- Suggestions and ideas from students can be written on blank sheets of the flipchart to enable them to see their ideas.

Research Studies on the Availability and Utilization of Instructional Media in the Teaching and learning of Computer Science in Secondary Schools

Educational researchers have bemoaned that wide gaps exist between the implementation and requirements outlined in the Nigerian educational policy. In addition, reasonable computer studies are yet to start in Nigerian secondary schools. The computer student ratio is small, funding by the government has not been encouraging, computer education syllabus is unpopular among students and parents and thus hardly implemented due to the unavailability of instructional media in our schools.
These findings are corroborated with the reports of several investigators that have examined the use of instructional materials in social studies classroom in some states in Nigeria. (Ekpo, 2001; Inyang-Abia,1992; Jimoh, 2009). In a comprehensive review of strategies for managing school curriculum, Ekpo (2001), observed that of all the problems planning education in Nigeria, the most intractable is the dearth of relevant teaching resources. Similarly, Inyang-Abia (1992) noted the non-availability of instructional materials in most schools in Awa Ibom state. Similarly, Jimoh (2009) investigated the use of instructional materials in the teaching of social studies in secondary schools in KabbaBunu Local Government Area of Kogi State of Nigeria. Resulted of his study indicated minimal use of instructional materials in the teaching of social studies in most schools in the area. Most teachers depended mostly on textbooks and chalkboards as instructional materials while other relevant instructional materials such as maps and charts, overhead projectors, televisions, cartoons, computers and pictures etc were sparingly used. The study also noted other problems associated with the use of instructional materials including cost of manufacturing and maintenance of instructional materials, reluctance of teachers to improvise, lack of social studies resource, rooms for storage of instructional materials, limited time allocated to social studies in the time table and lack of skills on the part of the teachers in the use of the instructional materials.

The experiences in the utilization of instructional media in social studies classroom instruction are not different from the reports of various investigators on the use of instructional media in other subject areas (Ogbobdah, 2008). In an appraisal of the utilization of instructional materials in the education of Migrant Fishermen's children in Rivers state of Nigeria, Ogbondah (2008) reported shortage of instructional materials in the schools. He noted that there was significant relationship between availability and adequate utilization of instructional materials and effective implementation of Migrant Fishermen's children education programme in Rivers state of Nigeria. Similarly, Abdo, and Semela (2010), reported low use of instructional media in primary schools of Gedo zone in southern Ethopia.
In Malawi, Kadzera (2006) noted that there was infrequent use of higher order instructional technologies such as overhead projectors, videos and computers in teacher Training Colleges. The author identified lack of creative thinking and initiative on the part of the teachers as factors responsible for failure to use the locally available instructional resources in their teaching. Dahar and Faize (2011) noted that there was deficiency in the use of instructional materials in schools in Punjab district in Pakistan.

The strategic and vital role of instructional materials and resources in the successful implementation of the National Junior Secondary schools social studies Curriculum cannot be overemphasized. As noted by Jimoh. (2009), the use of instructional materials is a sine qua non in effecting behavior change in learners in every field especially social studies. Advances in technology have brought instructional materials especially the projected and electronic materials to the forefront as the most radical tools of globalization and social development which have affected the classroom teaching/learning situation positively. Jimoh opined that new technological breakthroughs such as networked and non-networked, projected and non-projected, visual, auditory, audio-visual electronic materials are important landmark in knowledge transfer. With them both teaching and learning become very pleasant experiences and less stressful

Data Analysis and Result
This chapter presents the data analysis and results from the respondents. The results are presented in tables 2 and 3 and they are in line with the research questions. Table 4 contains the analysis of the test of hypothesis.

Research question 1
To what extent are instructional media available for teaching compuer science in secondary schools?

TABLE 2: Mean response on the extent of availability of instructional media for teaching computer science in secondary schools.

S/N	INSTRUCTIONAL MEDIA	LA	FA	PA	NA	MEAN	DECISION
1	Graphs	37	120	78	85	2.34	Poorly available
2	Computer laboratory	2	38	82	198	1.51	Not available
3	Models	1	1	37	281	1.13	Not available
4	Textbooks	42	79	170	29	2.42	Poorly available
5	Worksheets	42	79	170	29	2.42	Poorly available
6	CAI	3	47	98	172	1.63	Not available
7	Video/film	2	48	99	171	1.63	Not available
8	Charts	36	121	78	85	2.33	Poorly available
9	Slides	1	11	181	127	1.64	Not available
10	Overhead projectors	1	2	16	301	1.07	Not available
11	Filmstrip	1	7	21	291	0.81	Not available
12	Posters	4	177	89	50	2.42	Poorly available
13	Flipchart	5	175	91	49	2.43	Poorly available
14	LCD projector	2	8	20	290	1.13	Not available
15	Internet/Web	1	2	15	302	1.07	Not available
16	Chalkboard	310	5	4	1	3.95	Largely available

From table 2 above, items 1 to 15 have low mean score which were considered low in the decision rule as the values were less than 3.0. Only item 16 have a mean score value of 3.95. The grand mean of the table was also low at 1.87. Hence, it can be deduced that the extent of availability of instructional media in secondary schools is low.

Research question 2

To what extent are instructional media utilized in teaching and learning of computer science in secondary schools?

S/N	INSTRUCTIONAL MEDIA	LU	FU	PU	NU	MEAN	DECISION
1	GRAPHS	2	118	95	105	2.05	Poorly utilized
2	Computer Laboratory	1	19	173	127	1.67	Not utilized
3	Models	0	3	187	131	1.60	Not utilized
4	Textbooks	17	11	129	163	1.63	Not utilized
5	Worksheets	17	11	129	163	1.63	Not utilized
6	CAI	21	9	179	111	1.81	Not utilized
7	Video/Film	23	17	184	96	1.89	Not utilized
8	Charts	19	46	170	85	1.99	Poorly utilized
9	Slides	19	46	170	85	1.99	Poorly utilized
10	Overhead projectors	0	11	104	208	1.38	Not utilized
11	Filmstrip	25	13	89	193	1.59	Not utilized
12	Posters	14	33	181	92	1.90	Poorly utilized
13	Flipchart	74	49	109	88	2.34	Poorly utilized
14	LCD projector	3	13	105	199	1.72	Not utilized
15	Internet/Web	11	39	100	170	1.66	Not utilized
16	Chalkboard	190	95	33	2	3.58	Largely utilized

From table 3 above, items 1-15 have low mean value. Only item 16 have a high mean value of 3.58. The grand mean value was low at 1.89. This indicates that instructional media are utilized at a very low extent in the teaching and learning of computer science in secondary schools.

Test of Hypothesis

Hypothesis 1

H_0 1: there is no significant difference between the male responses and the female responses on the utilization of instructional media in the teaching and learning of computer science in secondary schools.

Table 4: T –test on responses between the male and female respondents on the utilization of instructional media in the teaching and learning of computer science.

GENDER	N	X	S.D	DF	T.CRIT	T.CAL	L.O.SIGNIFICANCE
MALE	140	1.80	0.033	318	1.96	-8.82	0.05
FEMALE	180	1.95	0.019				

From table 4 above, it can be deduced that there is no significance difference between the responses from the male and female respondents. Since the calculated value t= -8.82; is less than the critical value of 1.96 at 0.05 level of significance the null hypothesis is upheld.

Conclusion

The findings of this study reveal the primary challenge in the effective teaching and learning of computer science in our secondary schools. The results of the analysis of collected data indicated that instructional media which are relevant to the teaching and learning of the subject in our secondary schools are seriously lacking and as a result, the extent of utilization of these facilities in the teaching learning process is considerably poor. All the instructional media listed in the tables were of relevance to the teaching and learning of computer science and the situation where they aremost lacking in our secondary schools spells doom to the realization of the curriculum objectives.

Recommendations

Based on the findings of this study, the researcher makes the following recommendations:

1. There is need for all stakeholders including the federal, state and local governments and the private sector to contribute financially and materially in the provision of instructional media for the teaching of computer science in secondary schools.
2. There is urgent need for the organization of regular workshops/seminars for science teachers, head teachers and principals on the importance and current developments and progress in the use of instructional media in computer science teaching in secondary schools.
3. School heads, principals and officials of the ministry of education should ensure regular supervision to enhance effective use of instructional media in the teaching and learning of computer science in secondary schools.

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