

AVAILABILITY, UTILIZATION AND IMPROVISATION OF ICT MATERIALS FOR THE TEACHING OF HUMAN KINETICS IN SECONDARY SCHOOLS IN EBONYI STATE

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Abstract

In the teaching-learning process, emphasis is placed on learning outcome, hence our teaching communication often relies more on information products, thereby heightening the need for an effective Information and Communication Technology (ICT) process. It is in this light that this study focused on the availability, utilization and improvisation of ICT materials and equipment for the teaching and learning of Human Kinetics/Sports which is one of the core subjects. Surprisingly, ICT is still at its infancy due to paucity of the essential facilities and this is aggravated by poor spirit of improvisation.

The urge for the technological breakthrough has been the concern of the third world countries of which Nigeria is one. This is why the teaching-learning of science related subjects such as: Mathematics, Physics, Chemistry and Biology have assumed prominence in this struggle for technological advancement because they form the core of the science subjects. Human Kinetics as one of the practically oriented subjects plays a strategic role in the pursuit of physical fitness through technological growth.

The teaching and learning of Human Kinetics/Sports is besieged with a lot of constraints caused by paucity of manpower, finance, instructional materials etc. Based on this fact, the author focused attention on reforming Human Kinetics/Sports education through the use of Information and Communication Technology (ICT).

Olumba (2007) asserted that the wise teacher will always use equipment in form of instructional materials to help his students understand and learn. Since effective teaching cannot be conducted by the teacher by mere feeding the students with facts and information, the teacher should therefore expose his students to the varied educational resources to promote and stimulate learning among them. Linine (2007) observed that students learn positively and quickly not by hearing alone, but also by seeing and doing. This therefore stresses the need for suitable instructional materials and methods. This need for an effective instructional process is well addressed by Information and Communication Technology Process.

Statement of the Problem

It is crystal-clear that no technological development thrives in the absence of scientific background. Human Kinetics/Sports being one of the practically and science oriented core subjects deserves special attention. Most essential materials used in the teaching and learning of Human Kinetics/Sports at all levels of education are either manufactured or imported, thus their costs are heightened by the high import duties and the Value Added Tax (VAT) placed on their importation. This agrees with the belief of Eniayeju (1993) who stated that the elaborate equipment made by the commercial manufactures are prohibitively expensive and in most cases they are nowhere to be found. This soaring cost of ICT materials has greatly led to the paucity of the essential Human Kinetics/Sports instructional materials.

The nature and characteristics of the Nigerian child were not put into consideration in the manufacture of most imported materials, thus they are not tailored to the needs of the learners in Nigeria. This, in no small measure, inhibits learning. More so, in Nigeria, there is a great problem of effective utilization of the imported ICT equipment due to lack of technical know-how. This paucity of expertise makes the optimal use of the available materials difficult.

Ezegbe (1979) as cited in Olumba (2000) emphasized that the improvisation of the scarce ICT equipment, tools and materials has been hampered by lack of essential skills and raw materials. In actual sense, according to him, the best instructional materials are those produced by the teacher and his children.

As a matter of fact the prohibitive cost of ICT materials and paucity of teaching and improvisation skills have made this study quite indispensable. This study therefore addresses three major questions: How available are the ICT materials?, Are the ICT materials effectively used? and Are the ICT materials ever improvised by Human Kinetics/Sports teachers?.

Objectives

This study was an attempt to assess the extent the teaching and learning of Human Kinetics/Sports in senior secondary schools in Ebonyi State has been reformed using ICT equipment and materials. The study was targeted mainly at assessing the availability, utilization and improvisation of ICT facilities. Suggestions on how to improve the methods of using ICT to teach Human Kinetics/Sports in secondary schools in Ebonyi State and Nigeria generally were put into focus.

Research Questions

The study was guided by the following research questions:

1. To what extent are the basic ICT materials available for the teaching and learning of Human Kinetics/Sports in schools?
2. How far are the available ICT materials utilized by the Human Kinetics/Sports teachers?
3. How far are the ICT equipment and materials improvised by the Human Kinetics/Sports teachers?

Research Hypotheses

For the successful conduct of the study, the following research hypotheses were formulated:

1. There is no significant difference between the mean scores of teachers and students on the availability of ICT equipment and materials.
2. There is no significant difference between the mean scores of teachers and students on the extent of utilization of ICT in Human Kinetics/Sports lessons.
3. There is no significant difference between the mean scores of teachers and students on the extent of improvisation of ICT materials.

Methodology

The design adopted for this study is the user judgement survey or what Nworgu (1991) called Public Opinion Surveys. Users of ICT facilities are sampled and given questionnaire to complete concerning the availability, utilization and improvisation of ICT facilities for the teaching and learning of Human Kinetics/Sports.

Population and Sample

All the Human Kinetics/Sports teachers and students in all the senior secondary schools in Ebonyi State including the principals and educational administrators formed the population for this study. The total number is one hundred

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and three thousand, one hundred and sixty one. (Source: Ebonyi State Secondary Education Board Statistics, 2010).

Stratified random sampling was used to select a sample of four schools from each of the 13 Local Government Areas giving a total of 52 senior secondary schools for the study. A total of 450 respondents comprising 333 students, 52 teachers, 52 principals and 13 educational administrators were chosen for the study.

Research Instrument

The five-point likert-type scale of Strongly Agree (5), Agree (4), Undecided (3), Disagree (2) and Strongly Disagree (1) was employed in the design of the instrument which contained 35 items. The instrument was face and content validated by test and measurement experts from Faculty of Education, EBSU-Abakaliki. Coefficient of reliability was calculated to be 0.87, after a pilot study. Test-retest method of estimating reliability was employed using Pearson r.

Data Collection and Analysis Technique

A total of 450 copies of questionnaire were administered to all the sampled schools on different days which they completed on-the-spot. This gave a return-rate of 100%. For the analysis of the data, frequency counts, mean rating, percentages and standard deviation were used. The hypotheses were tested with t-test of statistical significance at 0.05 levels.

Findings

The data collected are presented in tables below:

Research Question One: To what extent are the basic ICT materials for the teaching and learning of Human Kinetics/Sports available?

Table 1
Responses on the Availability of ICT Materials

S/N	Ict Materials Low /High Technology Media	Availability Of Materials						Remark
		High		Low		No Existence		
		NO	%	NO	%	NO	%	
1.	Graphs	283	62.9	157	34.9	10	2.2	Available
2.	Charts	338	75.1	85	18.9	27	6.0	Available
3.	Pictures	296	65.8	70	15.6	84	18.6	Available
4.	Textbooks	430	95.6	11	2.4	31	6.9	Available
5.	Magazines	187	41.6	164	36.4	99	22.0	Available
6.	Journals	204	45.3	120	26.7	126	28.0	Available
7.	Whiteboard	350	77.8	85	18.9	15	3.3	Available
8.	Diagrams	73	16.2	252	56.0	125	27.7	Slightly Available
9.	Flannel board	51	11.3	199	44.2	200	44.4	Slightly Available
10.	Maps	239	53.1	186	41.3	25	5.6	Available
11.	Radio	85	18.8	236	52.4	129	28.7	Slightly Available
12.	Television	22	4.9	221	49.1	207	46.0	Unavailable
13.	Tape Recorders	70	15.6	186	41.3	194	43.1	Unavailable
14.	Film projectors	19	4.2	200	44.4	231	51.3	Unavailable
15.	Over Head Projectors	33	7.3	217	48.2	200	44.4	Slightly Available
16.	Slide projectors	15	3.3	120	26.7	315	70.0	Unavailable
17.	Opaque projectors	3	0.7	135	30.0	312	69.3	Unavailable
18.	Multi-media projectors	10	2.2	150	33.3	290	64.4	Unavailable
19.	Computers	80	17.8	217	48.2	153	34.0	Slightly Available
20.	Internet	5	1.1	50	11.1	395	87.8	Unavailable
21.	Electronic Boards	17	3.8	200	44.4	233	51.8	Unavailable
22.	Magnetic Boards	29	6.4	206	45.8	215	47.8	Unavailable
23.	Slides	34	7.5	224	49.8	192	42.7	Slightly Available
24.	Transparencies	21	4.7	262	58.2	167	37.1	Slightly Available
25.	Cameras	21	4.7	180	40.0	249	55.3	Unavailable
26.	Megaphones	53	11.8	88	19.6	309	68.7	Unavailable
27.	Handset	19	4.2	27	6.0	404	89.8	Unavailable

Table one above shows the available ICT materials as follows:

- i. Low Technology media: Graphs, charts, pictures, textbooks, journals, white boards, maps and magazines are available while diagrams and flannel boards are slightly available.
- ii. High Technology media: Overhead projectors, radio, computer, slides and transparencies are available while television, tape recorders, film projectors, slides, opaque and multi-media projectors etc are unavailable.

Research Question Two: How far are the available ICT materials utilized by the Human Kinetics/Sports teachers?

Table 2
Responses on the Extent of Utilization of ICT Materials

S/No	ICT Materials	Extent of Utilization				Mean Rating	Standard Deviation	Remark
		Very Often	Often	Rarely	Never			
1.	Graphs	163	188	51	48	3.04	0.95	Utilized
2.	Charts	105	191	84	70	2.74	0.99	Utilized
3.	Pictures	115	164	90	81	2.70	1.04	Utilized
4.	Textbooks	101	203	77	69	2.75	0.97	Utilized
5.	Magazines	75	98	181	96	2.34	0.99	Utilized
6.	Journals	80	76	116	178	2.13	1.12	Un-utilized
7.	Whiteboard	352	79	14	5	3.72	0.57	Utilized
8.	Newspapers	50	80	138	182	2.00	1.00	Un-utilized
9.	Diagrams	20	78	244	108	2.02	0.77	Un-utilized
10.	Flannel Boards	17	25	200	208	1.67	0.74	Un-utilized
11.	Maps	136	154	80	80	2.77	1.07	Utilized
12.	Models	126	140	101	83	2.77	1.07	Utilized
13.	Templates	50	170	179	51	2.49	0.83	Un- Utilized
14.	Radio	76	88	146	140	2.22	1.06	Un- Utilized
15.	Television	41	51	121	237	1.77	0.98	Un- Utilized
16.	Tape Recorders	83	112	170	85	2.42	1.00	Un- Utilized
17.	Film Projectors	12	59	172	207	1.72	0.79	Un- Utilized
18.	Slide Projectors	17	24	195	214	1.65	0.75	Un- Utilized
19.	Opaque Projectors	8	6	200	236	1.52	0.62	Un- Utilized
20.	Multi-Media Projectors	17	12	163	258	1.53	0.73	Un- Utilized
21.	Computers	35	69	179	167	1.94	0.91	Utilized
22.	Internet	4	12	190	244	1.50	0.60	Un- Utilized
23.	Electronic Boards	6	13	223	208	1.59	0.62	Un- Utilized
24.	Cameras	46	70	181	153	2.02	0.95	Un- Utilized
25.	Megaphones	93	86	190	81	2.42	1.01	Un- Utilized
26.	Handsets	27	33	213	177	1.80	0.82	Un- Utilized
27.	Laboratory Apparatus	150	168	43	89	2.84	1.09	Utilized

Table Two above shows the available ICT materials utilized to include:

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- i. Low Technology media: Graphs, charts, pictures, textbooks, magazines, white boards, maps and models are utilized while the un-utilized ones are journals, newspapers, diagrams, flannel boards.
- ii. High Technology Media: Only the computers and laboratory apparatus are utilized while other high technology ICT materials are un-utilized.

Research Question Three: How far are the ICT Equipment and materials improvised by the Human Kinetics/Sports teacher?

Table 3

Responses on the Improvisation of ICT Materials as stated in Table Two above.

ICT Materials	Extent of Improvisation			Mean Rating	Standard Deviation	Remark
	Always	Occasionally	Never			
1.	101	187	162	1.86	0.75	N.I.
2.	138	153	159	1.95	0.81	N.I.
3.	63	49	338	1.39	0.72	N.I.
4.	26	29	395	1.18	0.51	N.I.
5.	19	40	391	1.17	0.48	N.I.
6.	6	15	429	1.06	0.29	N.I.
7.	106	153	191	1.81	0.97	N.I.
8.	16	20	414	1.12	0.41	N.I.
9.	88	70	292	1.55	0.80	N.I.
10.	23	95	332	1.31	0.56	N.I.
11.	120	187	143	1.95	0.76	N.I.
12.	114	162	174	1.87	0.79	N.I.
13.	97	133	220	1.73	0.79	N.I.
14.	67	42	314	1.39	0.73	N.I.
15.	80	146	224	1.68	0.76	N.I.
16.	7	28	415	1.09	0.34	N.I.
17.	3	11	436	1.04	0.22	N.I.
18.	12	17	421	1.09	0.37	N.I.
19.	8	6	436	1.05	0.29	N.I.
20.	3	10	437	1.04	0.22	N.I.
21.	14	17	419	1.10	0.39	N.I.
22.	2	4	444	1.02	0.16	N.I.
23.	3	7	440	1.03	0.20	N.I.
24.	11	19	420	1.09	0.36	N.I.
25.	78	181	191	1.74	0.37	N.I.
26.	2	6	442	1.02	0.17	N.I.
27.	27	39	384	1.21	0.53	N.I.

N.I. Means: Not improvised

Table Three above shows that none of the ICT materials is improvised.

To identify problems encountered by the traders and suggest possible solutions to the problems

Hypothesis One

There is no significant difference between the mean scores of teachers and students on the availability of ICT equipment and materials.

**Table 4
Result of T-Test Analysis Comparing Responses of Teachers and Students on Availability of ICT Equipment and Materials**

Respondents	Mean (X)	S.D	t-Cal	t-Critical
Teachers and Educational Administrators	64.7	12.7	1.820	1.96
Students	42.1	14.3		

Significant at 0.05 level

Table Four above showed a mean and standard deviation of 64.7 + 12.7 for teachers and educational administrators and 42.1+ 14.3 for students on Availability of ICT equipment and materials. The table also showed a calculated t-value of 1.820 and a table t-value of 1.96 at 0.05 levels of significance. Since the table value is greater than the calculated value, the hypothesis was not rejected.

Hypothesis Two

There is no significant difference between mean scores of teachers and students on the extent of utilization of ICT materials in Human Kinetics/Sports.

**Table 5
Result of T-Test Analysis Comparing Responses of Teachers and Students on the Utilization of ICT Materials by Human Kinetics/Sports Teachers**

Respondents	Mean (X)	S.D	t-Cal	t-Critical
Teachers and Educational Administrators	81.5	11.8	1.46	1.96
Students	42.0	12.3		

Significant at 0.05 level

Table Five above showed a mean and standard deviation of 81.5 + 11.8 for teachers and educational administrators and 42.0 + 12.3 for students on the Utilization of ICT materials. The table also showed a calculated t-value of 1.46 and a table t-value of 1.96 at 0.05 levels of significance. Since the table value is greater than the calculated value, the hypothesis was not rejected.

**Hypothesis Three
There is no significant difference between the mean scores of teachers and students on the extent of improvisation of ICT materials for Human Kinetics/Sports lessons.**

**Table 6
Result of T-Test Analysis Comparing Responses of Teachers and Students on the Improvisation of ICT Equipment and Materials**

Respondents	Mean (X)	S.D	t-Cal	t-Critical
Teachers and Educational Administrators	73.8	10.3	1.347	1.96
Students	47.2	12.9		

Significant at 0.05 level

Table Six above showed a mean and standard deviation of 73.8 + 10.3 for teachers and educational administrators and 47.2 + 12.9 for students on Improvisation of ICT equipment and materials. The table also showed a calculated t-value of 1.347 and a table t-value of 1.96 at 0.05 levels of significance. Since the table value is greater than the calculated value, the hypothesis was not rejected.

Principal Findings

A. Research Question 1: The available ICT materials and Equipment include:

- i. **Low Technology Media:** Graphs, charts, pictures textbooks, journals, white boards, maps, and models.
 - ii. **High Technology Media:** Overhead projectors, radio, television, computer and transparencies (Low in terms of availability).
- B. Research Question 2:** The available ICT materials utilized include:
- i. **Low Technology Media:** Graphs, charts, pictures, textbooks, magazines, white boards and maps.
 - ii. **High Technology Media:** Only the computers and laboratory apparatus are utilized.
- C. Research Question 3:** Level of improvisation is quite low
- D. Hypothesis 1:** There is no significant difference between the mean scores of teachers/educational administrators and students on the availability of ICT materials and equipment.
- E. Hypothesis 2:** There is no significant difference between the mean scores of teachers/educational administrators and students on the extent of utilization of ICT materials in Human Kinetics/Sports.
- F. Hypothesis 3:** There is no significant difference between the mean scores of teachers/educational administrators and students on the extent of improvisation of ICT materials for Human Kinetics/Sports lessons.

Discussion

Analyzed data revealed that the available ICT materials and equipment are mostly low technology media. Some of these include: Graphs, charts, pictures, textbooks, white boards, etc. The only available high technology ICT materials are overhead projectors, radio, television, computers and transparencies. It was discovered that the available high technology media are grossly

inadequate. The fact is that most suitable and reliable ICT materials are imported, thus, their cost is heightened by high import duties and Value Added Tax (VAT) imposed by the government. The result is that most Human Kinetics laboratories and libraries and other resource centres become ill-equipped because of paucity of funds. The findings are in agreement with Eniaijeju (1993) who affirmed that the elaborate equipment made by the commercial manufacturers are prohibitively expensive and in most cases they are nowhere to be found. In a similar vein, Eshiet and Inyang (1994) as sighted in Olumba (2000) asserted that one of the major constraints slowing down the pace of implementation of educational programmes at all educational levels in the country is lack of necessary equipment. This confirms the gross in-availability of ICT materials and this has definitely affected the achievement of the goals and objectives of the national policy on education, mostly at the secondary level of education.

A review of the analyzed data revealed that only a handful of ICT materials and equipment are effectively utilized. These include mainly the low technology media such as: graphs, charts, pictures, whiteboards, maps, etc. In the area of high technology media, only the computers and laboratory apparatus are being put into effective utilization. A lot of constraints may have contributed to the inadequate utilization of the available ICT facilities, inadequate manpower, poor infrastructural facilities, phobia and ignorance may be posing much hindrance to the use of the modern ICT facilities. Olibie (2003), commenting on the undesirable trend in the context of Information Technology explained that students and teachers lack basic skills, thus cannot meet the challenges of Information Technology age. Based on this, Ogundowale (2000) advised that knowledge, learning, information and skilled intelligence are the raw materials needed for today's world. This is to say

that only genuine knowledge can enhance the rapid development of Information Technology.

Moreso, the study exposed the fact that in all secondary schools, improvisation of ICT materials and equipment for the teaching and learning of Human Kinetics/Sports is still in deep slumber. This is not an encouraging trend in the face of dwindling economy such as ours. Lack of ingenuity, motivation and financial aids are active factors militating against the zeal to improvise ICT facilities. This is why Odor and Azeke (1996) asserted that improvisation places undue demands on teachers. This implies that for a teacher to embark on improvisation, he needs to spare his time and money and he should be creative. This is where the government has to intervene in order to motivate and compensate the science teachers especially those who teach Human Kinetics/Sports and are interested in improvisation of ICT facilities.

Conclusion

Many educational and social intervention programmes have collapsed as a result of neglecting “the goose that lays the golden eggs”. Gone are the days when the reward of the teacher, who is the nation builder, is in heaven. The proposed special salary structure for the Nigerian teachers should be made to see the light of the day and awards and promotions should be attached to any effort made to uplift the standard of Information and Communication Technology in Nigerian schools, especially in the area of sciences. In view of the fact that all may not have equal access to these new educational, technological and social amenities, the underprivileged group should be assisted so that they can meet the requirements of the current trend.

The fact that ICT provides different communication modes does not however, mean that the teacher is not the driving force in the classroom. The teacher is still in control of the

instructional process because he still determines the course content and strategy.

Recommendations

The role of information and Communication Technology in Nigeria in the next ten years and beyond cannot be over emphasized. For a greater success of the programme to be recorded, there is need for the government to devote more time and money for implementing the laudable Information and Communication Technology programmes. This is a sure way of solving the problem of unavailability of the ICT materials and equipment.

Adequate efforts should be geared towards enhancing capacity building and promoting computer literacy throughout Nigeria. The Nigerian populace can adopt the use of fairly used computers and their accessories to reduce cost. This will in no small measure enable the new Information and Communication Technology policy to hit its desired target.

The Federal government of Nigeria must as a matter of urgency, set-up in partnership with interested private entrepreneurs a vibrant computer technology industry to make the technology more affordable to all.

For the enhancement of the utilization of ICT materials and equipment, government, non-governmental organizations and public spirited individuals should carry out orientation and training programmes for producing skilled personal to manage, maintain and operate the various technological installations planned for the Nigerian child. In-service training programmes must be designed and organized periodically so as to improve practising teachers’ competence in using computers to write programmes.

As a way of reducing cost of ICT materials which are usually imported, researches should be carried out on our indigenous/local

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technologies as a way of producing the ICT materials locally.

Government, Non- Governmental Organizations (NGOs), Parents Teachers Associations (PTAs) etc should come up with strategies for energizing the spirit of improvisation in Nigerian teachers. Continuous workshops, seminars and exhibitions should be mounted so as to encourage the local production of ICT materials.

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