



Utilization of Home Economics Laboratory in Teaching Senior Secondary School Students in Udenu Local Government Area Schools of Enugu State

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Abstract

The study investigated the utilization of home economics laboratories in teaching senior secondary school students in Udenu local government area of Enugu State. The study adopted a descriptive survey research design. Three objectives and three research questions guided the study. The population of the study was made up of 48 Home Economics teachers. The entire population was used for the study. The instrument for data collection was a questionnaire. Data collected were analyzed using mean and standard deviation. Based on the data analyzed, the study identified the tools and equipment available in Home Economics Laboratories, revealed 15 items as the problems encountered by Home Economics teachers in the utilization of laboratories in the teaching of Home Economics while 14 items were revealed as ways of solving the problems encountered by Home Economics teachers in the utilization of the laboratories. The study, therefore, recommended that; the tools and equipment in Home Economics Laboratories should be easily made available for the teaching and learning of Home Economics by the school administration, Education school board and school heads should adequately provide funds to Home Economics secondary schools teachers to make sure there are adequate provisions of laboratory tools and equipment to sustain regular practical activities in school, again Vocational and technical education board should organize regular in-service training for Home Economics teachers on how to make use of the recent technologies in practical teaching since some teachers do not have the skills on how to operate some equipment among others.

Keywords: Home Economics, Laboratories, Utilization, Teaching, Senior Secondary, Students

Introduction

Over the last few decades, the quality of education in Nigeria has continued to decline to lead to the growing

population of unemployable graduates and increasing incidence of functional illiteracy across the nation (Olukanni, Aderonmu & Akinwumi, 2014). For a

country to develop, it must have adequate human capital to do so, the human capital is obtained through sound education. It is believed that education is a pivotal part of human development, and can positively influence standards of living, health and governance (Hamidu, Ibrahim & Mohammed, 2014). Schools handle the important responsibility of imparting knowledge to students and developing them into responsible and enterprising citizens. One of the courses that help the achievement of this objective is Home Economics Education.

Home Economics is one of the subjects that is taught in secondary schools. Nwankwo (2009) opined that Home Economics has been identified as a field of study that can help youths off the street from searching for employment. Molokwu (2007) noted that Home Economics is both interdisciplinary and multi-disciplinary and is a field of knowledge with numerous saleable skills which make for self-employment and self-reliance.

Home Economics is a skill acquisition subject that can create job opportunities for secondary school students when learnt. It equips students with the knowledge, skills and attitudes required for programmes in its areas taught in senior secondary schools such as Food and Nutrition, Home Management, Clothing and Textiles, among others. Home Economics Education aims at promoting personal growth as its objectives and contents are geared towards educating individuals about family living and self-reliance (Nkwodimmah & Okoh, 2014).

In the teaching of Home Economics, the practical aspect should be taught thoroughly to enable the students to

acquire the necessary skills. Dada (2007) noted that practical work contributes to moulding students' minds about work. It also provides chances for the learner to directly practice the theoretical knowledge gained. Ohwovoriole & Ochonogor (2008) noted that putting theoretical knowledge into practice to increase the mastery of knowledge acquired is very important. This can only be done through adequate utilization of the Home Economics laboratory as an integral part of the instructional process adopted by teachers.

A laboratory could be conceptualized as a place, where theoretical work is practicalized and practical in any learning experiences involving students in activities such as observing, counting, measuring, experimenting, recording and carrying out fieldwork (Yara, 2010). With the laboratory experience, students will be able to translate what they have read in their texts to practical realities, thereby enhancing their understanding of the learnt concepts (Kofo, 2012). A laboratory is a room or a building specially built for teaching by demonstration of theoretical phenomena in practical terms.

Laboratories and their usage have been identified as very important and essential to the teaching of science and the success of any science subject (Yara, 2010). Laboratories have the potential to develop students' abilities and skills such as: posing scientifically oriented questions, forming hypotheses, designing and conducting scientific investigations, formulating and revising scientific explanations, and communicating and defending scientific arguments (Hofstein & Mamlok-Naaman, 2007). This and a lot of other reasons explain the reason why

laboratory adequacy, which is a school environment factor has been reported to affect the performance of students (Raimi, 2002; Adeyemi, 2008). Active engagement in laboratory exercises promotes a thorough understanding of the concepts described in theory classes, hence this helps to achieve the aims of Home Economics as a skill-oriented subject.

In Udenu L.G.A, the rate at which Home Economics teachers adopt the use of laboratories in instruction is dwindling. Home Economics as a subject instils creativity in students and makes them resourceful and self-reliant. This feat cannot be achieved if the teachers keep ignoring the importance of the laboratory in teaching and learning. Nwankwo (2009) noted that practical work help students develop manipulative skills that will give them the confidence and ability to perform effectively in any given situation. In Udenu L. G.A. some teachers do not usually find it convenient to make laboratory work the centre of their instruction. They usually complain about the lack of materials and equipment to carry out practical work. At the same time, it is possible that some of these materials and equipment may be locked up in the school laboratory store, but they choose to avoid the rigours of laboratory work as some of them are not knowledgeable in practical aspects and lack skills in the use of some laboratory equipment. The conditions under which many teachers function do not engender any enthusiasm to use the laboratory method of teaching even where they know that these materials and equipment are available. Class size in urban schools is getting larger and this does not usually encourage teachers to

use the laboratory method to teach. Other problems in the study area include a lack of adequate laboratories, poorly furnished laboratories, and insufficient and obsolete laboratory equipment, among others.

Skills acquired in Home Economics improve students' capabilities for job creative ventures. With adequate practical work in Home Economics, students will be competent to face economic challenges and survive in the existing unemployment situations. Hence this study seeks to identify strategies for improving Home Economics laboratories in Secondary Schools in Udenu local government area of Enugu state.

Purpose of the Study

The main purpose of the study was to investigate the use of laboratories in the study of Home Economics in senior secondary school schools in Udenu local government area of Enugu state. Specifically, the study identified;

1. tools and equipment available in- Home Economics laboratories in the teaching of secondary school students.
2. problems encountered by Home Economics teachers in the utilization of Home Economics laboratories in the teaching of secondary school students.
3. ways of solving the problems encountered by Home Economics teachers in the utilization of Home Economics laboratories.

Methodology

Design of the Study: The study adopted a descriptive survey design.

Area of the Study: The study was carried out in Udenu local government area of

Enugu state, Nigeria. Its headquarters are in the town of Obollo-Afor. Udenu local government area has sixteen secondary schools that offer Home Economics subjects at the Junior secondary and senior secondary levels in the different craft areas.

Population for the Study: The population for the study comprised 48 Home Economics teachers in Udenu local government area of Enugu. (Personal enquiry from Post Primary School Management Board [PPSMB] Obollo Afor Educational Zone). The entire population was used for the study because it was manageable, and there was no sampling.

Instrument for Data Collection: A questionnaire titled Home Economics Laboratories and Its Utilization in Secondary Schools (HELUSS) was used for data collection. The questionnaire was made up of two parts; part I elicited demographic and bio data while part II was made up of three sections. Each section was designed to meet the objective of the study using appropriate items. Cluster 1 was designed to elicit responses from respondents on the tools and equipment available in-Home Economics laboratories in secondary schools in Udenu local government area. In Cluster 2, the questionnaire was designed to collect information on the problems encountered by Home Economics teachers in Home Economics laboratories in secondary schools in Udenu local government area; while in Cluster 3, the questionnaire was geared towards identifying ways of solving the problems encountered by Home Economics teachers in the use of Home

Economics laboratories in secondary schools in Udenu local government area. The instrument adopted a modified four-point Likert scale with response options of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD).

Validation of the Instrument: The questionnaire was validated by three experts in the Department of Home Economics and one expert from the department of Science Laboratory Technology. Some corrections pointed out were grammatical errors, restructuring of some items and removal of three items seen as irrelevant to the purpose of the study. Corrections were effected based on the corrections of the validators, leading to the production of the final draft of the instrument.

Method of Data Collection: Forty-eight (48) copies of the questionnaire were distributed by hand. The researcher briefed two research assistants who helped with the distribution of the questionnaires and explained the items to the respondents when necessary. All the questionnaires were duly filled and returned giving a 100% return rate.

Method of Data Analysis: Mean and standard deviation were employed for the data analysis. In taking a decision, all items with mean scores which were 2.5 and above, were regarded as being agreed upon by the respondents as a positive answer to the item. While any item with a mean score below 2.5 was therefore regarded as being disagreed upon by the respondents. Hence, the mean score of 2.5 was the decision rule for this study.

Table 1: Mean Responses and Standard Deviation on the tools and equipment available in-Home Economics laboratories in the study area

Tools and equipment available in-Home Economics lab	\bar{X}	S. D.	Remarks
Clothing and Textiles Laboratory			
Tape measure and rulers	3.99	0.13	Agreed
Fashion Magazine	2.98	0.94	Agreed
Standard measurements	2.80	1.02	Agreed
Tracing wheel	2.11	1.94	Disagreed
Dressmaker's pencil	2.78	1.12	Agreed
Tailor's chalk	3.30	0.96	Agreed
Tracing paper	2.06	1.35	Disagreed
Scissors	3.37	0.89	Agreed
Cutting Tables	3.83	0.99	Agreed
Needles of different sizes	3.81	0.35	Agreed
Dressmakers' pins of different sizes	3.16	0.89	Agreed
Pin magnets	3.00	0.96	Agreed
Thread (different colours)	3.68	0.44	Agreed
Ironing board	2.35	1.08	Disagreed
Pressing iron	3.35	0.85	Agreed
Hangers	2.53	0.95	Agreed
Wardrobe	2.98	1.03	Agreed
Fitting Mirror	2.83	0.80	Agreed
Sewing machines	3.39	0.79	Agreed
Food and Nutrition Laboratory			
Gas Cooker	3.70	0.80	Agreed
Baking Oven	2.88	1.08	Agreed
Working Tables	2.74	1.19	Agreed
Shelves and cupboards	3.24	0.70	Agreed
Refrigerator	2.50	1.02	Agreed
Deep freezers	2.37	0.96	Disagreed
Blenders	2.66	0.98	Agreed
Mortar and Pestle	3.57	1.03	Agreed
Kitchen Sink	2.22	1.25	Disagreed
Mixer	2.32	1.03	Disagreed
Cake pans	3.41	0.80	Agreed
Serving Dishes	2.79	1.11	Agreed
Cutlery	3.52	0.78	Agreed
Teapots and tea cups	3.01	0.82	Agreed
Aprons	3.66	0.68	Agreed
Different types and sizes of pots	3.83	0.23	Agreed
Frying Pan	3.21	0.74	Agreed
Different types and sizes of plates	3.88	0.21	Agreed

Key: \bar{X} = Mean responses, SD = Standard Deviation of the responses

Table 1 shows the tools and equipment available in the Home Economics laboratories. From the table, results show that the most prevalent tools in the Clothing & Textiles laboratory are a tape measure and rulers (3.99), tailors chalk (3.30), scissors (3.37), cutting tables (3.83), needles of different sizes (3.81), thread (different colours) (3.68) and pressing iron (3.35). For the Food and Nutrition laboratories, the results show that the most prevalent tools are gas cookers (3.70), mortar and pestle (3.57), aprons (3.66), different types and sizes of

pots (3.83) and different types and sizes of plates (3.88) which were equal to or above the cut off mark of 2.50. The results also show that the respondents disagree on some items as being unavailable in the Home Economics laboratories. For Clothing & Textiles, the items include; Tracing wheel (2.11), Tracing paper (2.06) and Ironing board (2.3) whilst for the Food and Nutrition Laboratory the unavailable tools include: Deep freezers (2.37), Kitchen Sink (2.22) and Mixer (2.32).

Table 2: Mean Responses and Standard Deviation on problems encountered by Home Economics teachers in Home Economics laboratories in the study area

Problems encountered by Home Economics teachers	\bar{X}	S. D	Remarks
Lack of funds to maintain laboratory equipment	2.78	1.11	Agreed
Lack of well-designed work surfaces with sinks and water supply	2.97	1.06	Agreed
No approved guidelines for laboratory equipment usage by both staff and students	2.75	1.15	Agreed
Inadequately equipped laboratory	3.24	0.96	Agreed
Lack of interest of teachers in conducting practical classes	3.09	0.95	Agreed
Little time on the timetable to accommodate practical sessions	2.92	1.05	Agreed
Focusing of the teacher on finishing the scheme of work early and thus teaching practical classes theoretically to save time.	3.12	0.97	Agreed
Teacher pays little or no attention to practical activities	2.99	1.00	Agreed
Lack of laboratory attendants to assist the teacher during practical classes	3.04	1.03	Agreed
Lack of laboratory space to accommodate the number of students to be taught	2.97	1.13	Agreed
Lackadaisical attitude on the part of the school administration in purchasing items needed	3.26	0.94	Agreed
Lack of appropriate remuneration and allowances for teachers	2.92	1.04	Agreed
Inadequate provisions of textbooks and practical guides	2.97	1.06	Agreed
Lack of maintenance of laboratory equipment due to negligence	2.92	1.00	Agreed
Lack of students' interest in being part of practical classes	2.89	1.00	Agreed

Key: \bar{X} = Mean responses, SD = Standard Deviation of the responses

Table 2 shows the problems encountered by Home Economics teachers in Home Economics laboratories in Secondary schools in Udenu local government area. Table 2 shows that the items have a mean

score ranging from 2.75 to 3.26. All these means are above the cut-off point of 2.50. There are all agreed. This also shows that all the items are considered as the problems encountered by Home

Economics teachers in Home Economics laboratories in Secondary schools in Udenu local government area. The respondents tended to respond similarly to most of the items. This shows that the problems under investigation were peculiar and known to the respondents. The item - Lackadaisical attitude on the part of the school administration in purchasing items needed, scored the

highest mean of 3.26. Therefore, the respondents saw this as a very important problem encountered by Home Economics teachers. Also, the degree of agreement with item 3 - "No approved guidelines for laboratory equipment usage by both staff and students" which has the least mean of 2.75, further emphasizes that some problems were more prevalent than others.

Table 3: Mean Responses and Standard Deviation on ways of solving the problems encountered by Home Economics teachers in Home Economics laboratories

Ways of solving problems encountered in the laboratory	\bar{X}	S.D.	Remarks
Provision of funds to maintain laboratory equipment	3.80	0.66	Agreed
Provision of well-designed work tables with sinks and water supply	2.79	1.06	Agreed
Provision of approved guidelines for laboratory equipment usage by both staff and students	2.30	1.70	Disagreed
Provision of adequately equipped laboratory	2.89	1.03	Agreed
Motivating teachers to boost interest in conducting practical classes	2.96	1.05	Agreed
Ensuring ample time is provided on the timetable to accommodate practical sessions	3.15	0.97	Agreed
Reorientation of teachers on the importance of teaching practical concepts in the laboratory.	2.89	1.01	Agreed
Teachers should pay apt attention to practical activities	3.04	0.96	Agreed
Provision of laboratory attendants to assist teachers during practical classes	2.90	1.04	Agreed
School administration should ensure the prompt provision of funds for purchasing items needed in the laboratory.	2.95	0.98	Agreed
Ensure the provision of laboratory space to accommodate the number of students to be taught	3.00	1.08	Agreed
Ensure that appropriate remuneration and allowances for teachers are paid as and when due	3.08	1.00	Agreed
Ensuring the provisions of textbooks and practical guides	3.01	1.03	Agreed
Regular maintenance of laboratory equipment to ensure its durability	3.34	0.93	Agreed
Boosting students' interest in being part of practical classes by making learning to be fun and lively.	3.27	0.92	Agreed

Key: \bar{X} = Mean responses, SD = Standard Deviation of the responses

In Table 3, all the items got a mean score that was above the cut-off point except item number 3 on the provision of approved guidelines for laboratory equipment usage by both staff and students. Therefore, the respondents accept that all the items listed are the ways of solving the problems encountered by Home Economics teachers in Home Economics laboratories in Secondary schools in Udenu local government area except item 3. Item 3 which suggests the Provision of funds to maintain laboratory equipment received the highest mean of 3.80.

Discussion of Findings

The findings of the study present the following as the tools and equipment adopted in the Home Economics laboratories including for the Clothing and Textiles Laboratory; tape measure and rulers, fashion magazine, standard measurements, dressmaker's pencil, tailors chalk, scissors, cutting tables, needles of different sizes, dressmakers' pins of different sizes, pin magnets, thread (different colours), pressing iron, hangers, wardrobe, fitting mirror, sewing machines. For the Food and Nutrition laboratory the following tools and equipment were identified; gas cooker, baking oven, working tables, shelves and cupboards, refrigerator, blenders, mortar and pestle, cake pans, serving dishes, cutlery, teapots and tea cups, aprons, different types and sizes of pots, frying pan and different types and sizes of plates. However, an extensive literature review of literature conducted by the researcher showed that there was no empirical study in the literature that captures tools and equipment adopted in Home Economics laboratories. Hence, this study serves as a pilot study.

The findings of the study also show that the problems encountered by Home Economics teachers in Home Economics laboratories includes the following; lack of funds to maintain laboratory equipment,

lack of well-designed work tables with sinks and water supply, no approved guidelines for laboratory equipment usage by both staff and students, inadequately equipped laboratory, lack of interest of teacher in conducting practical classes, little time on time table to accommodate practical sessions, focusing of teacher on finishing scheme of work early and thus teaching practical classes theoretically to save time, teacher pays little or no attention to practical activities, lack of laboratory attendants to assist teacher during practical classes, lack of laboratory space to accommodate the number of students to be taught, lackadaisical attitude on the part of the school administration in purchasing items needed, lack of appropriate remuneration and allowances for teachers, inadequate provisions of textbooks and practical guides, lack of maintenance of laboratory equipment due to negligence, and lack of students' interest in being part of practical classes. These findings of this study on problems encountered in laboratories were also identified in studies conducted by Boyo (2011); Chukwunenye & Adegoke (2014); Chukwunenye (2015); Cossa & Uamusse (2015); Kaptin'ei & Rutto (2014) and Tsuma, (2007).

In research, it is expected that for every problem that arises, solutions should be provided to mitigate its effects. To this end, the present study also identified possible solutions to the problems encountered by Home Economics teachers in Home Economics laboratories. The possible solutions includes the following; provision of funds to maintain laboratory equipment, provision of well-designed work surface with sinks and water supply, provision adequately equipped laboratory, motivating of teacher to boost interest in conducting practical classes, ensuring ample time is provided on time table to accommodate practical sessions, reorientation of teachers on the importance of teaching practical

concepts in laboratory, teacher should pay apt attention to practical activities, provision of laboratory attendants to assist teacher during practical classes, school administration should ensure the prompt provision of funds for purchasing items needed in the laboratory, ensure provision of laboratory space to accommodate the number of students to be taught, ensure that appropriate remuneration and allowances for teachers are paid as and when due, ensuring the provisions of textbooks and practical guides, regular maintenance of laboratory equipment to ensure its durability, and boosting students' interest in being part of practical classes by making learning to be fun and lively. These findings of this study on possible solutions to problems encountered in laboratories were also identified in studies conducted by Kaptin'ei & Rutto (2014); Hamidu, Ibrahim & Mohammed (2014); Allen, et al. (2009); Adegoke (2017); Prabha (2016) and Ndiokubwayo (2017)

Conclusion

Quality education is achieved when the science laboratory and the laboratory in the context of teaching and learning science are made relevant regarding research issues as well as developmental and implementation issues. It is quite obvious that the laboratory space should be available to the teacher during the planning and preparation period and available to students for special projects, makeup laboratories, etc. outside their regular class hours. Each student should have his/her laboratory workspace. To that end, science teachers must be provided with an annual budget sufficient to purchase both expendable material and equipment necessary to conduct inquiry-based learning that is believed to enhance quality learning.

Recommendations

Based on the findings of the study, it was recommended that:

1. Curriculum planners should utilize the findings of the study as a useful guide during future curriculum review exercises to ensure that the curriculum content of Home Economics is adjusted using the strategies to solve these problems as provided by this study.
2. Government and school heads as the case may be should adequately provide funds to secondary schools to make sure there are provisions for laboratory consumables to sustain regular practical activities in schools.
3. The vocational and Technical Education Board should organize regular in-service training for Home Economics teachers on how to carry out most of the more recent technologies utilized in practice since most of them do not have the skills.

References

- Adegoke, B. A. (2017). Survey of laboratory activities in senior secondary school physics in Nigeria. *British J. of Ed., Society & Behavioural Science*, 19 (3), 1 - 10.
- Adeyemi, T. O. (2008). Science laboratories and the quality of output from secondary schools in Ondo State, Nigeria. *Asian J. of Information Management*, 2(1), 23 - 30.
- Allen, D., O'Connell, R., Percha, B., Erickson, B., Nord, B., Harper, D., Bialek, J., & Nam E. (2009). *University of Michigan physics department: GSI training course*. Ann Arbor, MI: University of Michigan Press.
- Boyo, A. (2011). Identifying the problems associated with studying of physics in Lagos State Nigeria; 2011. <http://www.wcpsd.org/poster/education/Boyo-Ar>
- Chukwunye, J. N. & Adegoke B. A. (2014). Catching students' interest in physics using computer simulated experiments. *West African Journal of Education*, 34, 295-309.
- Chukwunye, J. N. (2015). Effects of two modes of computer simulated experiment on senior secondary school students' achievement and interest in practical physics. [Unpublished doctoral thesis], Department of Teacher Education, University of Ibadan, Nigeria.

- Cossa, E.F.R. & Uamusse, A.A. (2015). Effects of an in-service program in biology and chemistry teachers' perception of the role of laboratory work. *Procedia - Social and Behavioural Sciences*, 167, 152 - 160.
- Dada, J. (2007) Enhancing practical in home economics towards self-reliance: Traditional fabric printing focus. *Journal of Home Economics Research*, 5(1), 30 - 39
- Hamidu, M. Y., Ibrahim, A. I. & Mohammed, A. (2014). The use of laboratory method in teaching secondary school students: A key to improving the quality of education. *Int. J. of Scientific & Engineering Research*, 5(9), 81-86.
- Hofstein, A & Mamlok, N. (2007). The laboratory in science education: The state of the art. *Chemistry Education Research and Practice*, 8 (2), 105-107.
- Kapting'ei, P. & Rutto, D. K. (2014). Challenges facing laboratory practical approach in physics instruction in Kenyan district secondary schools. *International Journal of Advancements in Research & Technology*, 3 (8).
- Kofo, A. A., (2012). Laboratories and sustainable teaching and learning about senior secondary school (SSS) geography in Nigeria. *Journal of Educational and Social Research*, 2 (4), 55.
- Molokwu, N. (2007). The challenges of reducing poverty in Nigeria: Repositioning home economics for sustainable education.
- Ndihokubwayo, K. (2017). Investigating the status and barriers of science laboratory activities in Rwandan teacher training colleges towards improvisation practice. *Rwandan Journal of Education*, 4(1), 47 - 54
- Nwankwo, J. N. (2009). Meeting the economic sustainability of the family through Home Economics. *Nigerian Journal of Home Economics*, 7 (1), 50 - 60
- Ohwovoriola, P.I. & Ochonogor, E.O. (2008). Equipping NCE Home Economics students with life skill for entrepreneurship development. *Journal of Home Economics Researcher* 6(1), 35 - 45
- Olukanni, D. O., Aderonmu, P. A., & Akinwumi, I. I. (2014). Re-integrating vocational technical skill acquisition into the educational curriculum: Capacity building for future professionals. [Paper presentation] *7th International Conference of Education, Research and Innovation*, Seville, Spain, 17th-19th November, 2014.
- Prabha, S. (2016). Laboratory experiences for prospective science teachers: A meta-analytic review of issues and concerns. *European Scientific Journal*, 12(34), 235-250.
- Raimi, S. M. (2002). Problem-solving techniques and laboratory skills as supplements to laboratory teaching in senior secondary school students' learning of volumetric analysis, Ph.D. thesis, University of Ibadan, Ibadan.
- Tsuma, R. (2007). *Science education in Africa*. Nairobi: Jomo Kenyatta Foundation.
- Yara, P. O. (2010). Adequacy of resource mathematics achievement of senior secondary schools in Southwestern Nigeria. *Nigeria Journal of Social Sciences*, 5 (2), 103 - 107.