

**USING UNMODIFIED REAL THINGS IN TEACHING SCIENCES AS INNOVATIVE
AND CREATIVE METHOD IN EDUCATIONAL SYSTEM**

BY

OKEBIRO GILBERT NYAKUNDI

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**ADDRESSING CHALLENGES FACING HUMANITY THROUGH RESEARCH AND
INNOVATION**

SUB- THEME

EDUCATION

Gilbert Nyakundi SOkebiro
Mt.Kenya University – Lodwar campus
School of Education
Email:okebirog@gmail.com
Tel.0727309990

ABSTRACT

**USING UNMODIFIED REAL THINGS IN TEACHING SCIENCES AS INNOVATIVE
AND CREATIVE METHOD IN EDUCATIONAL SYSTEM**

Teaching is a noble profession which needs a practical approach to concepts being taught in the classroom. Therefore, as the teacher presents a topic, in lesson and demonstrates on the concept, unmodified real things is very important for the learners' comprehension and retention of the facts. Unmodified real things refer to using real things as they are, unaltered only sometimes when they have been removed from their original real life environments. All their parts are intact, size and can function on being alive, for example algae, frog, butterfly and so on. The problem is nowadays teachers do not use unmodified real things in teaching sciences (Biology, Chemistry, and Physics) and leads to poor retention of concepts and facts taught. Some learners also are from some regions where such things are uncommon. The main objective is to investigate why teachers are not using unmodified real things in teaching biology in secondary schools. Survey method will be used through questionnaires to collect data from teachers of biology in secondary schools in Lodwar town, Turkana County. Data will be analyzed and presented in graphs and tables. The findings will be important to the learners because unmodified real things is advantageous as learners become familiar with objects in their surrounding and also learners will benefit by observing them alive, manipulate and use them to discover their characteristics, their operations, actions or their behaviors. It is concluded that learners in sciences need this creative and innovative method for the purpose high retention and comprehension of what is taught the classroom. So the research recommends science teachers to use the method regularly.

Key words: Unmodified; Real; Creative; Innovative; Sciences

USING UNMODIFIED REAL THINGS IN TEACHING SCIENCES AS INNOVATIVE AND CREATIVE METHOD IN EDUCATIONAL SYSTEM

Teaching is a noble profession which needs a practical approach to concepts being taught in the classroom. Therefore, as the teacher presents a topic, in lesson and demonstrates on the concept, unmodified real things is very important for the learners' comprehension and retention of the facts. Real things can take different forms and form different instructional value. Real things are important because learners are classified to give kinds or types of real things used in teaching system. Henceforth, forms of real things selected for instruction in the classroom should be determined by the purpose or goal or objective or aim to which they are to be used for teaching and learning process. Using this criteria there are three categories of real things as follows: [i]unmodified real things [ii] modified real things [iii] specimens.

Unmodified real things refer to those which are alive or unaltered only sometimes they are been removed from their original real life environment for example insects, amphibians, reptiles, birds, plants and mammals.

Modified real things are also known as creative reproductions of reality. These are creations of reality. Because of some real things in their natural state are not always available, when and where needed. Some of modified real things for the purpose of teaching are: the human skull or model of oil refinery.

Specimens may sometimes be unmodified real things. Specimens used in instruction are sometimes packed in bottles, jags, boxes and containers to permit direct observation studies by learners, and study by the learners. For safety and convenient studies, specimens are imbedded in plastic bags.

Significance of real things in teaching /learning process

[i].Real things are available in the environment and learners can get them.

[ii].Use of real things learners become familiar with objects in their surroundings [environment].

[iii]. When using the real things taken from the local environment, the learners realize that these real things can relate to their problems and activities.

[iv].They is often free and cost free [cost nothing].

[v].Learners manipulates the real things, practice with them and know the reality.

[vi]. When learners use the real things, discover their characteristics, their operations or their behaviors' in what is illustrated in the textbooks.

[vii].Whether teacher demonstrate the use of real things, learners benefit by observing them alive.

This research study is specifically interested in the unmodified real things. According to Reymont[1983], A child's knowledge is a complex and vaguely apprehended,therefore,the method of teaching must start with analysis, which is characterized by the resolution of the complex whole into parts. There are varied methods of teaching. Knowledge and skills are considered as the basis of classification of methods resting on word [narration], object [image] and action [motion]; thus the three corresponding categories of methods are oral, observational and practical [Zurve, 1967].in this sense therefore every method has something to offer and has its own merits and demerits. It is argued that a given method can be of great value to teacher and lose much of its value when used by another[Vaidya,1971].that is why the research uses the unmodified real things to make the study be more enjoyable for learning given the fact that most of learners do not like science.

The statement of the problem

The problem is nowadays teachers do not use unmodified real things in teaching sciences (Biology, Chemistry, and Physics) and leads to poor retention of concepts and facts taught. Some learners also are from some regions where such things are uncommon.

Historical background of using real things in teaching science oriented subjects

The scientific approach to teaching methods began with the natural method Comenius, the psychological synthesis of Pestalozzi, intellectual analysis of Herbert, joy learning devised by Froebel, play-way proposed by Rousseau, the Auto-didactic method of Montessori, the project method of Kilpatrick and Stevenson, and the laboratory plan of Dalton which are examples of

efforts to discover a systematic method of teaching which should be universal application [Vishwanath, 2006].

The objective of the study

The main objective is to investigate why teachers are not using unmodified real things in teaching biology in secondary schools.

The method of the study

Survey method will be used through questionnaires to collect data from teachers of biology in secondary schools in Lodwar town, Turkana county.

Research findings in the study

The findings show that the unmodified real things are not used in teaching and as a demonstration method teaching the learners. Teaching biology in secondary schools in the old days was practical approach and using nature study to make learners retain concepts and facts for long periods and even throughout their lifetime. The approach has changed from practical approach to theoretical approach due to the fact that teachers and learners do not have time to look or search for things outside classroom. ‘Gone are the days when learners could be seen in the fields of the schools running in search of grasshoppers, butterflies, frogs and so on to capture them in order to use them for demonstrations. This was nature study and science. According to Raymont[1983] “the inclusion of natural sciences in any scheme of general education has been in recent years been advocated in various grounds. By some this study is regarded as unrivalled instrument for training the powers of observation; but as we have seen, this can only mean directing into these particular channel activities which will in no case remain dormant. By others science is advocated because of its close bearing upon practical needs-physiology because of its bearing upon direct self-preservation, and the mathematical and physical sciences because of their application in arts and manufacture; but his plea is proper to the technical institution rather than to the school”.

“Gone are the days when learners could be seen in the forests and bushes looking for frogs, lizards, snakes and fish in rivers and so on to capture and bring them for classroom instruction and demonstration when they are alive in classroom. Raymont [1983], has argued that the

purpose of this branch of instruction is to beget an intelligent interest in the objects [unmodified real things] that surround us, so that we may really see something when we look at them; and thus to include a certain mental attitude towards these objects [unmodified real things], so that the curiosity with which a young child looks out upon the world may not be nipped in the bud. He who grows up in ignorance of fauna and flora of his parish generally lives to regret the omission, in precise proportion to the standard culture he attains in other ways.

Research found that the following advantages of using unmodified real things in teaching:

[i].Real things can be observed, handled, manipulated, and displayed discussed, assembled and disassembled.

[ii].Used in this way, they encourage learners' participation and create interest not only to the real things but also to the environment where these things are found.

[iii].Unmodified real things are alive and can also be observed in their natural habitat.

[iv].Unmodified real things can be assembled in one corner of the classroom or in school resource centre depending on the subject and learners can have advantage having been observed in the life history or cycle.

[v].Unmodified real things can be brought to class, in their natural habitat e.g. a classroom aquarium.

[vi].The value of unmodified real things cannot be over emphasized or stressed because they offer the scope for a more realistic approach.

[vii].Their construction [drawings] and instruction can be find opportunity in class participation in groups and individuals.

[viii].Wide range of availability of classification of unmodified real things, meet the requirement of the subject need and make possible and understanding of processes and construction [drawings].

[ix].The unmodified real things appeal to senses other than sight, touch, and sound, they make and behaviors or characteristics

[x].Use of unmodified real things promotes unity and cooperation among learners as they go and come back from nature study.

More recently and under impulse of research studies done, the sort of instruction now technically known as 'nature-study' has received much attention and is taking place formerly held by object lessons [Raymont, 1983].it is argued that 'whether the change will be entirely for the better will depend upon the precise way in the term nature-study is understood. There are different views identified from different arguments and schools of thought as follows;

First, it appears to be revival of object lessons with all their faults except that special attention is bestowed upon natural history.

Secondly, to others base the instructions upon specially prepared reading books, the contents of which the teacher is supposed to explain and illustrate a plan which however well carried out, is quite at variance with the spirit and methods of the true love of nature.

Thirdly, another view tends to the identification of nature study with elementary science and therefore, unless most carefully interpreted, to the premature use of scientific classification and terminology.

Fourthly, still another view is that not only is nature study distinct from elementary science, but that it should be quite informal and unsystematic, both in its aims and its methods, so much so that it should have no definite place in the curriculum, or at least in the time-table, that it should in a recreative subject outside the serious work of the school and that it should not be subjected to the tests usually applied to other branches of instruction.

Fifthly, on the whole, the safest course is perhaps, that of combining regular classroom instruction, conducted with the help of suitable specimens and apparatus with such informal expedients as calendars and journals, school excursions and junior naturalist club [Raymont, 1983].

A course of this kind could be made more and more connected as years advance, until, when the learner[pupil] is about fourteen the time is ripe for a more orderly and exact training in certain branches of elementary science properly so called [Hedger,1949].

Conclusion

The schemes of object lessons should be commonly devised for the purpose of imparting “useful knowledge” and without reference to the child’s experience and interests, so that a child/a learner in urban school might perhaps be told much about the rotation of crops, whilst gold mines and on manufacture of cloth and so on. Might be given in a school situated in purely agricultural county and so on. All methods appear to work well when young children/pupils/learners are motivated and exhibit too much eagerness to learn science[biology].The effectiveness of a given method of teacher depends mainly of four aspects:content,nature of the learner, facilities for teaching-learning process and the nature of the process of the learning[Vishwanath,2006].

It is concluded from the ‘nature study’ lesson that use of unmodified real things has some challenges to a teacher and the learner as follows;

[i].Some of the unmodified things like snakes and fish are not easy to be found for demonstration because of their nature of habitat.

[ii].Some unmodified real things are dangerous, risky to be handled carelessly like snakes and so on.

[iii].It is expensive to tame or preserve the unmodified real things in school, because it needs feeding and some of its foods can be hard or difficulty to get.

[iv].Some areas or regions are not endowed with forests or bushes which such unmodified real things habit or dwell for example arid and semi arid lands.Therefore,it becomes difficulty for a teacher to use ‘nature’ study in his/her lesson.

[v].Some unmodified real things can scare the learners because of their appearance.

[vi].In the nature study lesson, learners can be tired searching and capturing real things and may perhaps lead to lose interest and curiosity.

[vii].It will be difficult to assemble the unmodified real things in the classroom because the classroom would be dirty since they excreate and produce ordur in classroom.

[viii].Climatic factors like high temperatures discourage nature study and kill the morale of learners and teachers to search and capture unmodified real things.

[ix].It would be assumed by some stakeholders, learners, learners, educationists] that nature study would be a waste of time, given that the ‘syllabus’ is too detailed to be covered on good time.

Recommendations

From the discussion of the challenges of using unmodified real things some recommendations are suggested as follows;

1. Classification of unmodified real things should be made in advance and prior arrangement made to capture and collect them for demonstration.
2. Time should be created within the week and used for the nature study on the previous topic learnt in the classroom or a topic to be learnt the next lesson.
3. The schools situated in the given natural environment should use the available unmodified real things, so that others which are difficult can be illustrated by use of modified real things.
4. Learners should be warned in advance to be careful in capturing and searching for risky unmodified real things like snakes which are dangerous.
5. Since it would be difficult to tame some of the animals in the classroom and in schools, capture the unmodified real things and set them free for their natural habitat.
6. Because of tiredness of learners when they go out for searching and capturing unmodified real things, prepare them in advance and since they could want to break classroom monotony, they will appreciate and get encouraged and motivated.
7. Because of the risky and dangerous to use the unmodified real things, it is recommended for the school to buy ‘modified’ real things like human skull, or skeleton, mock-ups-the mock-ups in this sense they are mocking the reality. Mock-ups are sometimes used as working models to demonstrate the essential operations.

8. Learners are encouraged to use sand table constructions to replace unmodified real things. The sand table constructions can be used by learners to construct small productions of real things, such as a town for an accurate replica of the environment. The sand table may be used to produce models in expensive material sand figures of the real things can be mounted on them.

9. When real things are not available to the teacher can create a trail on his/her own depending on the needs for example; miniature dioramas-this refers to small scale representation of a scene in which three dimensional figures are displayed in front of a painted background.

10. Classroom demonstration on real things. To some extent it would be difficult for learners to have direct experiences of real things with the models due to various facts of cost, time, and safety and so on. When this happens, it is recommended that demonstrations will be the most important to show how a real thin works. A demonstration can be done by a teacher or one of the learners or a resource person. There are numerous advantages when learners demonstrate such as:[a]they can gain by participating and expressing themselves.[b]they develop their oral presentation and use other media where necessary[c] they also help have to draw or name,therefore,sharpening their creativity. Effective demonstration should put the needs of the demonstrator and audience or observer at heart. And the observer must be able to see, hear and understand what is being demonstrated. How to conduct the demonstration, and then consider the following prerequisites:

[i] Need to be audible-to be heard by the audience.

[ii] Give or provide only what views needed to meet their goals.

[iii] Keep an eye on your observers, audience, to give us the feedback and then react.

[iv]Take note of demonstration pace and adjust accordingly-individual experiences of the learner is superior. Demonstration method if one considers long-term consequences of the lesson. According to Washton [1967], those methods and approaches are the best which involve students maximally in the lesson; which demand reflection on the part of the student and lastly, methods that are base upon concrete experience, examples and individual and group discussions. It is believed that developmental approach of teaching science demonstrates over authoritarian

approach because the former tends to develop in pupils, the ability to inquire and solve problems, think scientifically and acquire scientific attitude.

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