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Observations as assessment tools in Nigerian secondary schools

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ABSTRACT

This study investigated the use of observations as techniques for assessing secondary school students in Ekiti State, Nigeria. The participants were 360 teachers selected from all the secondary schools in the 3 Senatorial Districts of Ekiti State, Nigeria using simple random sampling technique. The instrument employed for data collection was a 36-item self-constructed questionnaire. The data collected was analysed using mean scores, standard deviations and one way Analysis of Variance. The findings revealed that majority of the teachers do not usually employ observations as tools for assessing the students. There were significant differences in the use of anecdotal records, rating scales and systematic observations as assessment tools with rating scales the most frequently used while systematic observations the least. Also, there was no significant difference in the use of observations as tools for assessing cognitive, affective and psychomotor domains of learning. It was recommended that observational techniques be incorporated into the curriculum of the pre-service teachers' programmes, the serving teachers and assessors be exposed to workshops and seminars so as to equip them with skills in observation and they should be encouraged to always employ observations to assess the students.

Keywords: Observation, assessment tool, behaviours and traits, records and data.

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INTRODUCTION

There are many indices of ensuring sustainable education system in a country. An important index is putting effective quality control management process in operation in the education system. The quality control management process strategies ensure the quality of education. The quality of education is determined by the extent to which educational objectives (acquisition of knowledge, skills and attitudes) are realised. Assessment tools are used to measure the attainment of the objectives. Effective and objective assessment tools are indispensable to quality control management process strategy. Among the educational evaluating tools is observation.

Observation is an everyday activity at home, school, work place or any place. What one observes or sees or hears may not register with him or her and may be quickly forgotten. Summerhill and Taylor (1992) said that each person forgets far more than he or she interactively observes. This may probably be due to the fact that there is no pre-determined strategy to look for specific things to record or to retain what is observed. Kolawole (2005) described observation as an act that entails watching closely with interest to detect certain qualities, attributes or traits in students. Kolawole stressed further that the observation method is the best technique of evaluating the psychomotor and affective traits and certain characteristics of the students by paying particular attention to the behaviour of individuals in a given setting.

Okpala et al. (1993) described observation as the act of looking out for and recording the presence or absence of verbal and non-verbal behaviours of a person or group of persons. According to Warner and Maurer (1984), scientific observation is the systematic gathering of information about behavioural actions and reactions through the use of specific instruments. The use of specially designed assessment instruments to collect

observation data is referred to as “observational techniques” (Okpala et al., 1993). An observational technique is a method of determining the final performance of students for a given period of time through series of observations. It measures experiences as the learning programme progresses and as well gives a final picture of the achievement of the learners. Hence, observational technique serves to cater for the students’ cognitive, affective and psychomotor domains in a continuous and progressive manner.

Observations as assessment tools have some characteristic features which include: who are the observers; on what conditions and settings or environment in which observations can be carried out or what should be observed. What to assess dictates the type of tools that can be employed for the assessment. For instance systematic observation of category option is very appropriate for assessing classroom interactions (Flanders, 1970; Muhammad, 2005) while anecdotal records are good for unstructured behaviours or traits. Observational data are indispensable for effective teaching and learning in our schools. To meet this function, observation should possess the following features which are the summary of the works of various authors: including Tull and Del (1976), Sax (1980), Gronlund (1985) and Okpala et al. (1993):

i) One or more observers are placed in an observation setting at a specified time and for prescribed length of time;
ii) Observers are guided by some instructions and ground rules on the use of the observational tool;
iii) The trait to be observed must be educationally significant and relevant to the objectives of education, and hence, leads to the growth and development of the observee;
iv) Traits are unambiguous, broken up into small but specific behaviours and stated in behavioural terms;
v) Data must be assessable to observation;
vi) Behaviour must be repetitive, frequent or predictable;
vii) The event must cover a reasonable short time span, but long time span activities can be broken into phases for observation purpose;
viii) The influence of extraneous variable such as lack of carefully defined guidelines and process should be carefully and meticulously taken care of. This is to ensure that validity is not compromised.

On the issue of who should observe, Okpala et al. (1993) stated that an observer is a person who is trained to look out for occurrence or absence of behaviour. Hence, the observer can be a teacher, a parent, a student, an administrator, a researcher or other persons outside the school system. To function effectively an observer is required to possess good knowledge of the behaviours of interest, the instrument he would use and the procedure for recording his observation. There are two types of observers: participant and non-participant observers. *A participant observer* is the one who participates actively as a member of the group he is observing**.** He/she performs three duties, that is, participating, observing and recording. *A non-participant observer* is described as one who is not a member of the group and does not play active role in the group activity. The observer only plays the role of observer.

On the condition or setting or the environment in which observation can be carried out, Guba and Lincoln (1981) in Summehill and Taylor (1992) said that there are two situations: natural setting and contrived setting, but Okpala et al. (1993) added another setting which is referred to as controlled setting.

i) Natural setting: This includes the home of the child, classroom, playground, library, school garden or laboratory.
ii) Contrived setting: This is an environment which is designed or created by an observer to appear natural to the person being observed where as it is really controlled by the observer.
iii) Controlled setting: In this situation, the observer limits behaviours of the person being observed to those relevant to his need and interest. The observer identifies and defines specific behaviours and controls for the observation in order to minimise unwanted behaviours.

Another condition is that the observee may or may not be aware of the observation exercise.

Based on the above three situations (that is, the observer’s role - participant or nonparticipant, the setting - natural or contrived and whether the observee is aware of the observation or not), Guba and Lincoln (1981) proposed a topology of observation situations which involved eight cells. Omodara (2010a) represented the topology of the observation situations with a tree diagram. Taking cognisance of controlled setting along with the natural and contrived setting, a topology of observation situations involving twelve cells can further be represented in the tree diagram shown in Figure 1. An observer can choose any of the cells for the observation.

On what should be observed, many authors agreed that the behaviours that can be assessed using measurement from observation are classified into two: process and product (Sax, 1980; Hopkins and Stanley, 1981; Groundlund, 1985; Okpala et al., 1993). Assessment of process involves measuring the extent to which procedures are followed which may embrace: logical sequence in which the steps are implemented, efficiency of steps taken, choice of equipment, distribution and use of time and each safety measure, those actions that represent common errors (but are limited in number and can be clearly stated). The desired actions and likely errors should be arranged in the appropriate order in which they are expected to occur.

The assessment of product involves measuring

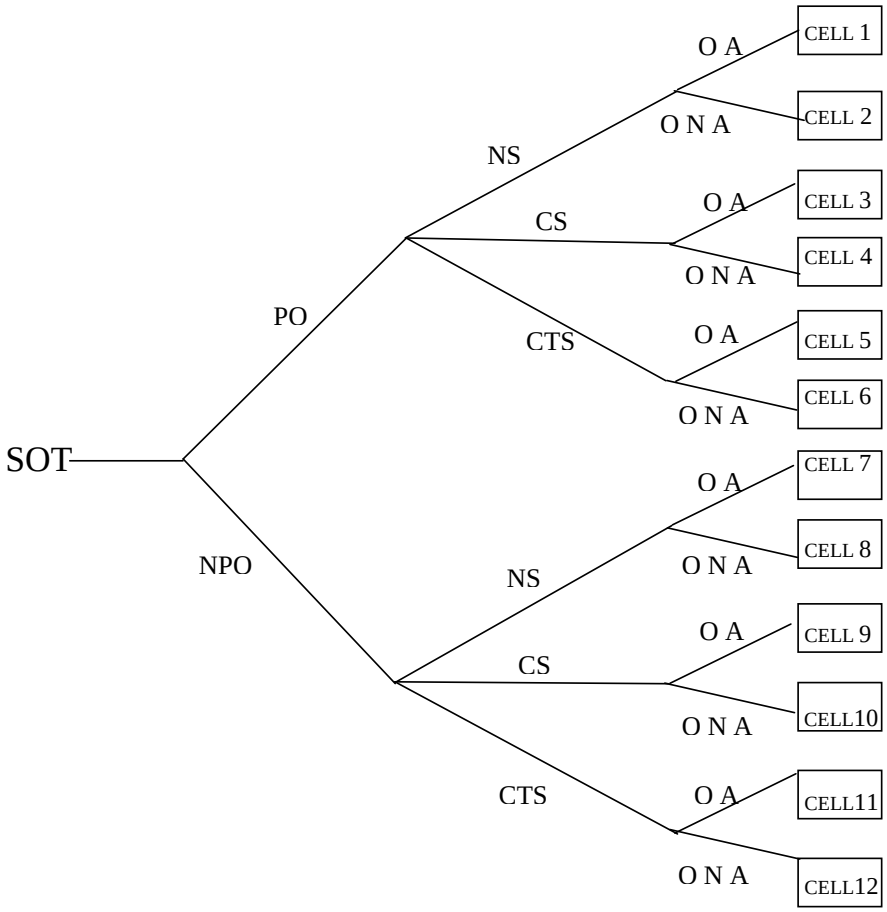

Figure 1. Tree diagram for scientific observation. Adapted from the tree diagram in Omodara (2010a) which was adapted from Guba and Lincoln (1981) topology of observation situations. SOT – Systematic Observation Technique ; PO – Participant Observer ; NPO – Non-participant Observer ; NS – Natural Setting; CS – Contrived Setting; CTS – Controlled Setting; OA – Observees Aware of the observation; ONA – Observees not Aware of the observation. CELL 1: Participant observer, Natural setting, others aware of observer's inquirer status. CELL 2: Participant observer, Natural setting, others not aware of observer's inquirer status. CELL 3: Participant observer, Contrived setting, others aware of the observer's inquirer status. CELL 4: Participant observer, Contrived setting, others not aware of the observer's inquirer status. CELL 5: Participant observer, Controlled setting, others aware of the observer's inquirer status. CELL 6: Participant observer, Controlled setting, others not aware of the observer's inquirer status. CELL 7: Non-participant, Natural setting, others aware of the observer's inquirer status. CELL 8: Non-participant, Natural setting, others not aware of the observer's inquirer status. CELL 9: Non-participant observer, Contrived setting, others aware of the observer's inquirer status. CELL 10: Non-participant observer, Contrived setting, others not aware of the observer's inquirer status. CELL 11: Non-participant observer, Controlled setting, others aware of the observer's inquirer status. CELL 12: Non-participant observer, Controlled setting, others not aware of the observer's inquirer status.

outcomes of processes which may focus on the quality, quantity and usability of the products. The summary of the situations in which observational data could be useful include: measuring classroom process variable, attainment of programme objectives, programme implementation, identifying difficulties in programme use, or identifying changes introduced by teacher or supplementing data from other sources (Yoloye, 1978; Okpala et al., 1993). The measurement of these variables is important in ensuring quality education system. However, examination which is the major assessment tool in the schools is inadequate for measuring effectively all these variables. Hence, the use of observation is inevitable else these aspects will be left without adequate

and effective evaluation.

According to Summehill and Taylor (1993), one way by which observation data can be recorded is by mechanical or electric means such as audio tapes, video tapes and photographs and films. The advantages are that tapes can be listened to repeatedly and photo can be reviewed repeatedly. Both can form permanent records and can also provide basis for reliability and validity studies. They can also eliminate to some extent an observer's bias or miss-interpretation. Field Note; Log, Diaries or Journals; Category Notes; Episode; and Panels are other common means of recording observations. These should be available in schools for teachers' use as they employ observations as means of assessing the learners.

Observation instruments can be grouped into three main types – Anecdotal records (AR), rating scales (including Checklists) (RS) and systematic observation instruments (Sign or Category system) (SO). They are potent and very effective techniques for evaluating cognitive, affective and psychomotor aspects of learning (Grondlund, 1985; Sax, 1980; Omirin, 1999; Kolawole, 2005). It has been observed that the use of observation as means of assessment by the teachers or assessors is not common in the schools. Paper-and-pencil-tests have been used extensively to evaluate cognitive aspects of learning (Omodara, 2010b; Bandele and Omodara, 2011) such as those pertaining to knowledge, understanding and thinking skills. Other aspects such as work skills, performing laboratory experiment, use of equipment, use of time, use of resources, initiative, creativity, persistence dependability, willingness to suspend judgement and inquiring mind have been neglected. Observation is a potent means of assessing these aspects of learning.

Purpose of the study

The study assessed the use of observations as techniques for assessing the secondary school students in Ekiti State, Nigeria. The comparison of the use of anecdotal records, rating scales and systematic observation as assessment techniques was made. The comparison of the use of the techniques for assessing cognitive, affective and psychomotor domains of learning was also carried out.

Research questions

The following research questions directed the focus of this study:

1. What is the extent of the use of observation techniques as assessment tools in the schools?
2. Is there any difference in the use of anecdotal records, rating scales and systematic observations as tools for assessing the students?
3. Is there any difference in the use of observation techniques for assessing cognitive, affective and psychomotor domains of learning in the schools?

Procedure

The study was a descriptive research of the survey type which described the use of observation as techniques for assessing students in the schools. The participants were 360 teachers (120 from each of the senatorial districts) selected from all the secondary schools in Ekiti State, Nigeria. Simple random sampling technique was employed to select 10 schools from each of the senatorial districts and the selection of 120 teachers was done in proportion to the population of the teachers in each of the chosen schools. The instrument used was a 36-item self-constructed questionnaire.

Copies of the instrument were given to three judges who are experts in test construction from the Faculty of Education, Ekiti State University, Ado-Ekiti. They scrutinized and judged the items of the instrument to be face, content and construct valid for the assessment of the use of observations as assessment tools in the schools. Test-re-test method and Pearson product moment correlation coefficient were employed to test the reliability of the instrument and 0.91 was obtained as its reliability coefficient. The copies of the questionnaire were administered on the respondents and for the purpose of analysis "Yes" response to an item was assigned 1 point while 0 point was assigned to a "No" response. The scores were converted to percentage scores. The assumption is that score < 50.0 is low, while score = 50.0 or > 50.0 is high. Data obtained was analysed using mean scores, standard deviations and one way Analysis of Variance.

RESULTS

Research question 1

What is the extent of the use of observation techniques as assessment tools in the schools?

Table 1 shows that the use of rating scale as observation instrument for assessing the students has the highest mean score, 48.90. The use of anecdotal records has mean score 22.90, while the use of systematic observation had the least mean score of 4.13. The results show that the scores of the teachers on the use of anecdotal records are widely spread with standard deviation 22. 90 – That is the scores are heterogeneous. The scores on the use of rating scales are more heterogeneous (with standard deviation 26.50) than anecdotal records, while the scores on the use of systematic observations are homogeneous – standard

Table 1. Comparison of teachers' scores on the use of anecdotal records, rating scales and systematic observations as assessment tools in schools.

Techniques	No of cases	Min	Max	Means	SD
Anecdotal records	360	0	78	22.90	22.90
Rating scales	360	0	100	48.50	26.50
Systematic observation	360	0	22	4.13	7.25

Table 2. ANOVA comparison of the use of anecdotal records, rating scales and systematic observation.

Source of variance	Sum of squares	Df	Mean square	F_{cal}	F_{tab}
Between groups	39,768,65	2	19,884.325	58.6258.62	3.00
Within groups	121,090.116	357	339.188		

P < 0.05 (result significant).

Table 3. Scheffe's post hoc analysis.

Groups	/μ/	σ_{μ}	$S_{cal.}$	$S_{tab.}$	Result
AR and RS	25.60	5.653	4.528	2.449	Significant
RS and SO	44.37	5.653	7.849	2.449	Significant
SO and AR	18.73	5.653	3.313	2.449	Significant

Table 4. ANOVA comparison of the use of observation techniques for assessing cognitive, affective and psychomotor domains of learning.

Source of variance	Sum of squares	Df	Mean square	F_{cal}	F_{tab}
Between groups	342	2	171	3.074	5.15
Within groups	334	6	55.67		

p > 0.05 (result not significant).

deviation 7.25. The extent of the use of observation techniques as assessment tools in the schools is generally low. Systematic observation was the least employed, followed by anecdotal records, while the use of rating scales tops the list.

Research question 2

Is there any difference in the use of anecdotal records, rating scales and systematic observation as tools for assessing the students?

Table 2 shows that the F-calculated was 58.62 while the corresponding table value at 0.05 level of significance was 3.00. Since $F_{cal.} > F_{tab.}$, there was significant difference in the scores of teachers on the use of anecdotal records, rating scales and systematic observation as tools for assessing students in the schools. Hence a post hoc analysis was carried out as presented in Table 3

Table 3 shows that there was significant difference in the use of Anecdotal Records and Rating Scales. Also, there was significant difference in the use of Anecdotal Records and Systematic Observation as assessment tools. Furthermore, there was significant difference in the use of Rating Scales and Systematic Observation as assessment tools in the schools.

Research question 3

Is there any difference in the use of observation techniques for assessing cognitive, affective and psychomotor domains of learning in the schools?

Table 4 shows that the F-calculated was 3.075, while the corresponding table value at 0.05 level of significance was 5.14. Since $F_{cal} < F_{tab}$, there was no significant difference in the use of observation technique for

assessing cognitive, affective and psychomotor domains in the schools.

DISCUSSION

The study revealed that the extent of the use of observation techniques as assessment tools in Ekiti State secondary schools is generally low. This implied that majority of the teachers do not usually employ observation to assess their students. The teachers tenaciously cling to the use of paper-and-pencil-tests for assessing aspects of learning pertaining to knowledge, understanding and thinking skills. This they do at the neglect of other parts of school curriculum which cannot be easily assessed by examination system. Corroborating this assertion Dines (1985) enumerated the parts to include practical work in science, oral work in languages, field work in geography or history, open ended or time-consuming problem in mathematics to mention but few. Hence, observation techniques for assessing these parts of the curriculum should be devised. Otherwise there is danger of them not being taught which may cause serious threat to the so much desired quality assurance in the education system of the country.

In agreement with this, Thompson (1983) asserted that the existing system of examination places a premium upon the accumulation of knowledge and does not encourage schools to teach their pupils how to use their knowledge other than in an examination. Hence, observation techniques can be employed to complement the examination system. Moreover, the fact that examination malpractices have been identified as a bane to the assessment procedures in schools (Bandele and Omodara, 2011), the use of observation could be a boon to assessment procedures since it is devoid of examination malpractices.

The study revealed that there were significant differences in the use of anecdotal records, rating scales and systematic observations as assessment tools. Although low, the use of rating scales tops the list, while the use of systematic observations was at the lowest level. This can be due to the flexibility of rating scales, which allows for easier adaptability for use as assessment tools than anecdotal records or systematic observations in many situations in the school system. Also data obtained from rating scales are easier to be analysed and interpreted than those of systematic observations. The reason why observation technique is not commonly use in the regular classrooms at present can be attributed to the fact that the observation instruments are difficult to develop.

Corroborating this assertion, Okpala et al. (1993) stated that observational technique is a specialty in educational evaluation programmes and that the normal methods courses in teachers' preparation programmes do not equip pre-service teachers with skills on observation. In line with this are Daud (1994) and Omodara and Bandele (2010) who agreed that systematic observation is one way of observing teaching behaviours but also said that one of the problems with the method is in constructing the categories that would be appropriate for the purpose of the observation - it is difficult to construct systematic observation instrument. Therefore, teachers are not competent to develop or even to use observation instruments for classroom observations.

The study also revealed that there was no significant difference in the use of observations when assessing cognitive, affective and psychomotor domains of learning in the schools. This implied that the teachers used observations to assess the three domains at almost equal extent. The findings corroborated the assertion that observations are potent and very effective techniques for evaluating affective and psychomotor aspects of learning (Gronlund, 1985; Sax, 1980; Kolawole, 2005) and also revealed that they can as well measure cognitive aspects of learning.

Observational techniques depict actual behaviour in natural situation (Hopkin and Stanley, 1981; Ahmann and Glock, 1981; Losardo and Notari-Syverson, 2001). A student may profess great interest in medical sciences or engineering but approach laboratory work in a haphazard and uninteresting fashion. Observational techniques use "samples" of behaviour rather than "signs" of behaviours. For instance asking a tailor to sew a pair of trouser gives you a sample of the behaviour. Sample of behaviour is far better than a sign of behaviour such as certificates, references or self-reported proficiency. Observing a driver displaying driving skills behind the steering wheel satisfies an employer than presenting a driving certificate or licence which is a sign of how well he can drive.

Furthermore, the identified numerous advantages of using observation tool in assessment procedures include the followings: Observation involves direct experience, useful for data collection where other forms of instruments are impossible, can be combined with other data collection techniques thereby adding to data quality. It provides check on other evaluation methods and also enables the determination of the extent of change in the students typical patterns of behaviour, the handicapped students (who cannot hear properly/have bad eye sight or any deformity) are typical of those needing special attention. More extensive observations of such students are helpful in understanding their difficulties and indicating remedial actions (Webb, 1966; Tull and Hawkins, 1976; Guba and Lincoln, 1981) to mention but a few.

However, the limitations of observation include: observation relies heavily on personal interpretation; the observer could be biased or loose objectives in the process of observing; there may be tendency to focus on exotic data. Observation may not be realistic for large population and may not be valid for an entire population

unless a plan for representativeness is developed. There is a tendency for observation to be unsystematic because of lack of standard operating procedures and guidelines. Observation may lead to reactivity on the part of those being observed. For instance the presence of the observer may create fear, anxiety and change of behaviour in the observees. It may cause abnormal quietness, response to questions in an unusual manner or behave in a way to impress the observer (Summerhill and Taylor, 1992; Okpala et al., 1993).

These limitations can be combated by ensuring that the observation is guided by clear instructions and ground rules on the use of the observational tools, the trait to be observed must be educationally significant and relevant to the objective of education. Efforts should be made not to include ambiguous traits in the items of the observational tools - traits could be broken up into small but specific behaviours and stated in behavioural terms. Furthermore, activities that have long time span could be broken into phases. For effective and meaningful observation the data must be assessable to observation.

Conclusion

Based on data analyses and interpretation of results the following conclusions were drawn for the study. Majority of the teachers in Ekiti State secondary schools do not usually employ observations as tools for assessing the students. Although the extent of use as assessment tool is low, rating scales are most frequently employed followed by anecdotal records, while systematic observations were the least employed. There were significant differences in the use of anecdotal records, rating scales and systematic observations as assessment tools in the schools. Also there was no significant difference in the use of observations as tools for assessing cognitive, affective and psychomotor domains of learning.

RECOMMENDATIONS

Based on the findings of this study the following recommendations were made:

1. Observation techniques should be incorporated into the curriculum of the pre-service teachers' programmes to equip would be teachers with skills in observation.
2. Seminars, lectures and workshops should regularly be organized for the in-service teachers and other assessors of learning so as to equip them with knowledge, skills and the art of using observation tools in assessing school programmes.
3. Teachers and other assessors are strictly advised to always complement paper-and- pencil tests with observation tools in the schools so that no aspect of the curriculum will be left untaught.
4. There should be provision of materials such as audio tapes, video tapes, image viewer, camera, field notes, anecdotal records forms and many aid materials in the schools and teachers should be encouraged to use them appropriately.

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