

Evaluation of the Mathematics Programme of Kano Educational Resource Department

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Abstract: *This study was undertaken to evaluate the mathematics programme of Kano Educational Resource Department. The research design used was evaluation. The main objectives of the study are to determine whether or not the set objectives of the mathematics section are achieved. Based on the result appropriate recommendations were proffered. A questionnaire designed by the researcher was used. The questionnaire was validated by three (3) curriculum experts, three mathematics educators and an english language specialist. The instrument reliability coefficient of $r = 0.646$ was obtained by using Kuder – Richardson formular 21 (KR21). 8 out of the 10 null hypotheses raised and tested were not rejected while 2 were rejected. The result showed that in general the objectives of the mathematics section are achieved. Recommendation for more funding and staff were advanced.*

Keyword: *Evaluation, Mathematics*

I. Introduction

Today's world is certainly becoming more technical and scientific. This is making life more sophisticated. Nations especially the industrialized ones are advancing rapidly. Undoubtedly, the secret behind their development is the mastery of science and technology. A number of people have written on the importance of science and technology in nation building. These include, among several others, Abbas (2000), Korau (2006), Isa (2017) and Nizoloman (2013). In fact, no nation can develop without science and there will be no science without mathematics.

Thus, as Umuoyang (1998) in Nizoloman (2013) argued any nation that relegates the teaching and learning plus research in mathematics/mathematics education cannot advance technologically. In realization of the importance of mathematics, Nigeria made the subject a basic requirement to study engineering, medicine, science and technology courses in our tertiary institutions. Added to that a good understanding of the subject is now a prerequisite for intelligent citizenship (Isa, 2017).

The importance of mathematics notwithstanding current students' poor performance in the subject especially in public examinations is quite disturbing and leaves much to be desired (Akubuiro and Joshua (2004). Korau(2006); Isa(2010) and Nizoloman(2013)).The poor performance could be linked to a number of factors which include students' interest, mathematics phobia(Bature,2006) as well as the way instructions are presented to the students(Nizolman,2013).Whatever are the problems related to the poor performance in the subject, the teacher remains the pillar upon which the whole teaching learning process rest. "The teacher is still an indispensably significant factor for motivating and imparting knowledge to the learners at each level of education "(Ekpoh and Eze,2015,p.31).Supervision is so vital especially in recent times for effective quality control. Thus, all possible help must be provided to mathematics teachers to ensure efficiency. To this end, there is the need to have fully functional inspectorates with highly trained staff.

1.1 Purpose of The Study

The main purpose of the study is to determine whether or not the objectives of the mathematics section of Kano Education Resource Department (the inspectorate arm of kano state ministry of education popularly known as (KERD) are being achieved.

Specifically, this study is designed to evaluate the operations of the mathematics section of Kano Educational Resource Department (KERD). The objectives of the KERD are to:

1. Provide effective supervision for quality control
2. Prepare and conduct examinations
3. Enhance and develop curricula
4. Conduct in-service training/workshop/conferences
5. Liaise with other educational bodies and institutions in the country and abroad
6. Disseminate information concerning mathematics education to schools
7. Procure and distribute teaching aids to schools
8. Conduct and promote research in various fields of education
9. Stimulate a love of writing and publishing as a pleasurable activity, and

10. Organise quizzes and exhibitions for schools in the state

Thus, the objectives of the study are:-

- a) To determine whether or not the set objectives of KERD are achieved
- b) Based on the results to prefer solutions.

1.2 Statement Of The Problem

Thus, this study aims at finding out whether or not the set objectives of the mathematics section of KERD are being achieved and to make recommendations.

1.3 Hypotheses

In line with the research objectives of the study, ten (10) null hypotheses were formulated to find out if there is significant difference between mathematics teachers and inspectors in the opinions as to whether or not the mathematics section of KERD has achieved its objectives of:-

1. Setting, conducting and moderating mathematics examinations
2. Improving teachers' proficiency through courses, seminars and workshops
3. Inspecting schools for quality control
4. Preparing scheme of work for all schools
5. Procurement and distribution of teaching aids
6. Carrying out experiments and research in mathematics education
7. Liaising with other bodies and institutions so as to be aware of new discoveries/innovations
8. Disseminate information concerning new innovations to schools in time
9. Organizing quizzes and exhibitions for schools, and
10. Stimulating a love of writing and publishing.

II. Methodology

2.1 Research Design

This study is a non-experimental survey. This is due to the fact that the variables studied already exist and the researcher will not temper with them as argued by Nizoloman (2013).

2.2 Population

The target population of the study consisted of all the inspectors in the mathematics section of the KERD and all mathematics teachers in secondary schools throughout Kano state.

2.3 Sample

A total of forty (40) secondary schools across the zonal education offices in kano state were randomly selected out of the public secondary schools in the state. From these forty secondary schools selected for the study, two mathematics teachers were used.

Similarly, all the four (4) mathematics inspectors were used.

2.4 Sampling Technique

Multi-stage sampling technique was used in the conduct of the study. Random sampling was used both at the zonal education offices as well as at the school level.

III. Data Collection

3.1 Instrumentation

The study being an evaluation of programme is aimed at finding out whether or not the objectives of the mathematics section of the KERD are achieved. To achieve this goal a researcher designed questionnaire was developed and used. The questionnaire has four sections as follows:-

SECTION A: this section has five (5) items and contains questions relating to the respondents' place of work, sex, qualifications as well as how he/she found mathematics in his/her school days.

SECTION B: questions 6 – 15 in the questionnaire are statements about the objectives of the mathematics section of KERD. This section, which is based on the likert four point scale, sought to find out the feelings of the respondents on the objectives of the section as well as the degree of their achievement.

SECTION C: questions 16 – 18 are statements which sought respondents' reactions to their experiences with the mathematics section.

SECTION D: questions 19 – 24 are related to behavior of the mathematics inspectors

At the tail end of the questionnaire are two questions that deals with which aspect of the programme the respondents' value most and suggestions for improvement

3.2 Validity of The Instrument

Two most commonly used types of validity, content and face, of the questionnaire were ensured. A total of seven experts consisting of three (3) curriculum specialists, three (3) mathematics educators and an English language expert validated the questionnaire. Their suggestions and criticisms were taken care of.

3.3 Reliability of the Instrument

Reliability of the questionnaire was obtained using Kuder-Richardson formular 21. The use of the KR21 was based on the argument that “its chief advantage is the ease with which it can be applied by gronland 1976 in (Isa, 2017). Using this formula, a reliability coefficient of 0.646 (0.65) was obtained. This shows the consistency of the questionnaire.

3.4 Data Collection Procedure

In all 94, questionnaires were distributed and 84 were collected. This represents 89% of the responses. The table below shows the number of questionnaires distiributed and the number collected.

Table 1. number of questionnaires distributed and number collected

Respondents	Number distributed	Number collected	% collected
Inspectors	4	4	100%
Teachers	90	80	89%
Total	94	84	

A major reason for the difference between the number of questionnaire distributed and the number collected is the fact that in some of the selected schools there is only one mathematics teacher against the two expected. The distribution and collection process was handled by the researcher.

IV. Data Analysis And Results Presentation

4.1 Data Analysis

Frequency counts, percentages as well as chi-square were used to analyse the data collected. Simple frequency counts and percentages were used in regards to respondents’ views. Chi-square test was used to compare respondent’s views. All the ten (10) hypotheses were tested at 0.05 level of significance.

4.2 Findings and Conclusions

1. The first hypothesis was tested using chi-square. The result obtained was that the null hypothesis was not rejected. The finding was that there is no significant difference between mathematics teachers and mathematics inspectors in their opinions on the extent to which the mathematics section of KERD set, conduct and moderate examinations. The calculated chi-square was 0.08 and the critical chi-square at $p=0.05$ and $df = 1$ was 3.84. Since the calculated chi-square was less than the critical, the null hypothesis was not rejected. We can therefore claim that both mathematics teachers and inspectors agreed that the section is working positively towards achieving that particular objective.
2. The second hypothesis was also tested using chi-square. Similarly, the null hypothesis was not rejected. This shows that there is no significant difference between the two sets of respondents in their opinion on the extent to which the section achieves the objectives of improvement of teachers’ proficiency through courses, seminars, workshops and conferences. The calculated chi-square was 0.47 while the critical chi-square at $p = 0.05$ with $df = 1$ was 3.84. Hence, one could conclude that the section is doing a lot with regards to the conduct of seminars, workshop and conferences.
3. The null hypothesis was similarly not rejected. It could be concluded that both sets of respondents agreed that one of the achievements of the section was the inspection of schools for quality control.
4. The null hypothesis was also not rejected. This could mean that the two sets of respondents agreed that section prepare schemes of work in mathematics for all schools in the state.
5. The null hypothesis was not rejected. This suggests that both the teachers and the inspectors agreed that the section procure and distribute teaching aids to schools.
6. The null hypothesis was rejected which showed that a significant difference was found between the opinions of the teachers and the inspectors. One could conclude that experiment and research in mathematics education does not receive due attention it deserves.
7. The null hypothesis was not rejected. This seemed to suggest that the teachers as well as the inspectors agree that the section liaise with other educational bodies and institutions so as to be aware of new discoveries and innovations in mathematics education.
8. The null hypothesis was not rejected which suggests that both sets of respondents agreed that the section disseminate information concerning new discoveries and innovations in education to schools.
9. Similarly, the null hypothesis was not rejected. This suggests that both sets of respondents agreed that the section organizes quizzes and exhibitions for schools in the state.
10. The null hypothesis was rejected. This indicates that a significant difference was found between the teachers and the inspectors. Thus, it could be said that the section is not doing a lot in stimulating a love of writing and publishing.

From the foregoing, it could be concluded that there is no significant difference between mathematics inspectors in their opinions on the extent to when the objectives of the mathematics section of KERD have been achieved.

V. Recommendation

One of the objectives of this study is to make useful recommendations that may help in improving this section as well as other similar sections throughout the country.

Three types of recommendations were given:

- a. Recommendations to KERD
- b. Recommendations to ministry of education, and
- c. Recommendations for further research.

Recommendations to KERD

It was observed that almost all the mathematics inspectors were engaged in other activities particularly in the evaluation, examinations and continuous assessments sections of the KERD. The authorities at the KERD should see to it that mathematics inspectors are not overused. Otherwise, the objectives set for their section may be made to suffer. Adequate attention should be given to experiment and research by providing all necessary assistance – funi, materials as well as time.

As much as possible the teacher-inspector contact period should be reconsidered. More visits to schools are needed. This researcher in particular prefers ‘unscheduled’ visits to schools for obvious reasons. Efforts should be made to provide more in-service courses for mathematics teachers. This should not be less than once in the academic year.

Recommendation to Ministry Of Education

The ministry should henceforth regulate the movement of staff to the KERD in general. In other words, frequent transfers should be checked. Also, the ministry should ensure that only qualified and experienced staff are posted. The general notion held that KERD is a ‘dumping ground’ should be corrected. This could be done by posting interested and energetic people to the department against posting ex-this and ex-that. The ministry should also fully equip the KERD both financially and staff wise. A situation where four inspectors are expected to handle 227 schools does not give room for excellence. Perhaps this was why most of the teachers used for this study argued that the teacher inspector contact period is little. Computers should be installed at the KERD for compilation of continuous assessment, day to day work as well as setting the ball rolling for the state’s desire to introduce computer education in its schools. The ministry should without delay establish a modern and well equipped mathematics lab. at the KERD. Inspectors without teaching qualifications should be encouraged to read post-graduate diploma in education. Special training should be given to the inspectors. This could be arranged locally or in collaboration with one of the universities in the country and should be regular.

Recommendations for Further Research

Due to some problems, this research was limited to Kano State only, as mentioned under section 1.6 of the study. This study may be expanded to cover the 11 northern states or even the whole country.

A similar study may be conducted to cover the state science and technical schools board. This is because it is believed that an extension of this research will help greatly in identifying the problems of the inspectorate arms of the various sections of the educational ladder.

The same study could also be carried out using different evaluation models.

The entire programme of the Kano Educational Resource Department could be evaluated.

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