

## THE EXTENT OF USING INDIVIDUALIZED EDUCATIONAL PLAN ON ACADEMIC PERFORMANCE IN SCIENCES BY DEAF LEARNERS: A CASE OF REV. MUHORO SECONDARY SCHOOL FOR THE DEAF; NYERI COUNTY, KENYA

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**ABSTRACT:** The main aim of the study was to analyze the extent to which teachers were incorporating Individual Education Program (IEP) in teaching science subjects. The study was guided by Felder Silverman Dimension Model theory to science learning. Descriptive Case study design was used. The study was conducted at Rev. Muhoro Secondary School for the Deaf in Mukurwe-ini Sub-County, Nyeri County, Kenya. The target population of study comprised of; Principal, teachers and students of Rev. Muhoro Secondary School for the Deaf. The Principal, teachers who took part in the study were sampled purposively while students were sampled along stratus. The sample size of the study involved one principal, seven science teachers and forty eight students. Data collection was done by use of questionnaires, interview and lesson observation. It was then analyzed both qualitatively and quantitatively. The study revealed that, even though most teachers maintained high academic aspirations in class many of them had little understanding on the planning and implementation of IEP in class. It was therefore commended that, there was need for re-training of teachers on how to plan and use IEP in class. It was further stressed that, only teachers who had trained in Special Needs Education recruited to teach in schools for the deaf and that inspectorate services should be enhanced to ensure that teachers were using IEP in their teaching.

**KEYWORDS:** Deaf learners, Individual Education Program, Special Needs Education.

### BACKGROUND TO THE STUDY

Roles of teachers of the deaf students are changing rapidly, as the classroom settings and demographic factors of teaching science becomes more demanding. Science subjects are increasingly viewed as subjects of life-long utility among students, society and the country at a large. This is reiterated by McIntosh, (1994) who state that, scientific literacy has become a necessity for everyone as the need to use scientific information to make choices that a rise in everyday life increases.

Early educators such as Dewey, (1964) Montessori, (1968) and Froebel, (1974) believed that, effectiveness of teaching and learning are determined by the type of teaching strategies applied in classroom. National Research Council (2005) echoes the same sentiments when it asserts that, pedagogical practices that address students' initial understandings and preconceptions about topics, provides a foundation of factual knowledge and conceptual understanding. While achievement of these objectives remains important, the use of Individual Education Programs part of this achievement can't be ignored. According to Jodi, (1996) Individualized Education Program (IEP) is a developmentally appropriate curriculum that is based on each learner's needs. Developmentally appropriate, means that each child's unique progress and growth are used to determine what he or she can accomplish.

Gibbs, (1992) noted that, individualized learning gives students greater autonomy and control over choices of subject matter, learning methods and pace of the study. Keefe, (2007) agrees when he acknowledges that every learner has unique experiential background and unique set of talents and personal interest which must be taken into consideration during

learning in class. There are no two individual learners who exhibit the same behaviour patterns or possess the same goals or aspiration in class (Njeri, 2012).

Rittenhouse, (2004) while evaluating newly trained teachers of the deaf, on the use of IEP in teaching noted that, while they were typically energetic and willing to attempt to tackle new ideas, they often lacked the skills necessary for successful maintenance and development of Individualized Educational Program (IEP). Similar study conducted at the Institute of Science in America, establishes that Individual Education Program was key to students' improvement in class.

El-zraigat, (2012) conducted a study in Jordan on challenges of educating students who were deaf and hard of hearing. He surveyed 30 teachers and four Principals drawn from four schools. In his survey, he found out that many teachers lacked necessary expertise in planning Individualized Education Program (IEP). Ndurumo (1993) in Kenya established almost the same findings. He noted that, students who are deaf benefited more on IEP as their needs and interests were catered for in class based on their learning pace. He further noted that, failure of deaf students to master academics subjects was as a result of failure by teachers of the deaf learners to cater for their individual differences. Ndurumo, (1993) study highlighted urgent need to introduce Individualized Educational Program (IEP) in curriculum to address the prevailing poor performance. The present study sought to find out if teachers at Rev. Muhoro School were incorporating IEP in their teaching during learning of science subjects in class and how this was contributing on performance in sciences.

### **STATEMENT OF THE PROBLEM**

In spite critical role played by science education in promoting scientific and technological development in the country, the performance in national examination in these subjects had been generally poor. MoEST (2005) laments that the performance in Mathematics and science subjects at secondary education level had been characterized by poor performance in national examinations. According to Aduda, (2009), the most recent outcry was made by the then Minister of Education Prof. Ongeru, who noted that, there had been a drastic drop in performance in sciences in 2008 KCSE

Even of more concern is that, this poor performance has even been poorer in secondary schools for the deaf in Kenya. The trend has been observed for some years now and is quite disturbing. A five year period 2009-2013 had shown that, the performance at Rev. Muhoro Secondary School for the Deaf had been oscillating at mean score of 2.0 and below (Rev. Muhoro KCSE Performance Index). While we appreciate that, there had been some research to correct the trend in hearing schools; the same in deaf schools largely remains. It is likely reiterating that achievement of scientific goals remain difficult if this trend is not checked (Eshiwani, 1998). This issue becomes even more urgent as research a study (McIntosh, Sulzen, Reeder, and Kidd 1994; Molander, Pedersen and Norell, 2001 and Moores and Martin 2006) indicates that science subjects had been greatly neglected in the Curriculum for deaf learners. These findings prompted the present study whose aim was to analyze extent to which teachers' were incorporating Individual Education Program in teaching science subjects and how this was contributing on performance in science in KCSE

### **PURPOSE OF THE STUDY**

The purpose of the study was to analyze the extent to which teachers were incorporating Individual Education Program in teaching science subjects at Rev. Muhoro Secondary School for the Deaf and evaluate its contribution on performance in KCSE. Findings revealed that, there was positive correlation between the use of IEP and performance in sciences

### **OBJECTIVES OF THE STUDY**

- To find out how teachers incorporate IEP in teaching science subjects to deaf learners
- To establish if students have an IEP to monitor their performance in sciences
- To find out frequency of IEP discussion between the teacher and the student

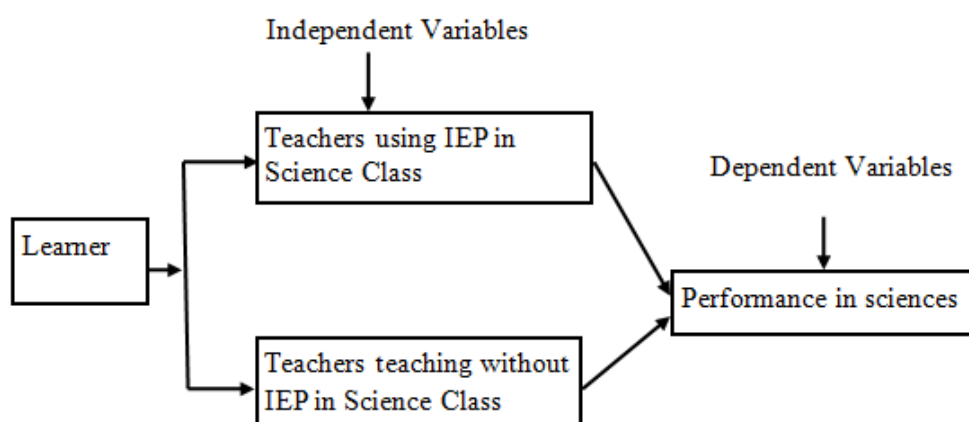
### **THEORETICAL FRAMEWORK**

The study was guided by Felder and Silverman (1998) Dimension Model Theory to Sciences Learning. According to Felder and Silverman (1998), there are four Dimensions of learning styles related to each student's preferred mode of receiving information in class. The four Dimensions are based on the type of information students receive in class (sensory or intuitive) modality in which they receive it (visual or verbal) process by which they receive it (actively or reflectively) and the order in which they receive it (sequentially or globally).

The theory stresses that in any learning, all learners are unique and therefore, there is need to adopt teaching strategies that effectively takes into account their learning styles. The fact that, students who are deaf requires extended services such as the use of IEP makes the theory an effective preposition for this study. Felder and Silverman (1998), noted that, the use of pedagogical strategies that provides students with time to think and reflect in class and strategies that structure student-student and teacher-student interaction should be emphasized as a way to learning

### CONCEPTUAL FRAMEWORK

The conceptual framework shows the interrelationship between the variables of the study and the main focus of Felder Silverman Dimension Model Theory to Science Learning. In this conceptual framework, IEP is the main variable in learning science subjects. If the learners are to occupy an active role in science class, then the teacher in class will have to adopt an IEP in teaching. This teaching strategy is in line with Felder Silverman Dimension Model to science learning which advocates for learning that is based on the learning needs of each learner. The resultant effect of this is increased accommodation and assimilation leading to improved performance in sciences at KCSE



**Figure 1: The Conceptual Framework Model on Effective Teaching Strategies in Classroom**

Source: Adopted from researcher study;

### RESEARCH DESIGN

The study used descriptive Case study design. According to Nachmias and Nachmias, (1981) there are virtually no specific requirements guiding Case research. They assume a holistic view of the process under the study (Gummesson, 1988) and hence the approach was useful in responding to how and why questions about poor performance in sciences at Rev. Muhoro Secondary Schools for the Deaf. The study used both qualitative and quantitative data collection strategies even though most of the Case studies emphasize qualitative approach. This was meant to minimize limitations of each method

### TARGET POPULATION

The target population comprised of; 1 Principal, 23 Teachers, and 210 Students of Rev. Muhoro. The Principal provided data on how science subjects had been performed by deaf students for years, while teachers and students gave their views on the level of IEP use in classroom, and how this was contributing on performance in sciences.

### SAMPLING TECHNIQUE

The researcher used purposive sampling technique when sampling Teachers and Principals to take part in research. This was due to the fact that, participants to take part in the study were few based on the research design adopted. The school had three streams with a population of 210 students with 23 teaching staff. Out of this population of 210 students, 140 were deaf students while 70 were hearing students. The classes of deaf students were double streamed with hearing students

occupying the third stream. Stratified random sampling techniques were used to select a sample size of 48 deaf students from Form Two to Form Four with each Form producing 8 participants to ensure equal representation. Form one students did not participate owing to the fact that they were yet to settle and would not have had reliable information touching on this study. On the other hand, out of 23 teachers, there were 7 science subjects teachers- Chemistry, Biology and Physics who took part in this research. The school principal also took part in the study by informing the researcher on how teachers were utilizing IEP in class to improve performance of deaf learners in sciences. This formed a sample of 56 participants. The result of the study were then generalised to the whole population.

### **SAMPLE SIZE**

The sample size consisted of 48 Students, 7 Science Teachers and 1 Principal making a total sample of 56 respondents as shown in the table below;

*Table1:-Sample size*

School	No. of students	No. of teachers	No. of head teacher	Total
Rev. Muhoro Sec	48	7	1	56

### **RESEARCH INSTRUMENTS**

The study used questionnaires, interview and lesson observation schedules as instruments for data collection. There were two sets of questionnaires meant for science teachers and students respectively, then interview schedule for Principal. The questionnaires included questions related to the extent at which teachers were incorporating IEP in teaching and how this was contributing on performance in sciences in class. In addition, the questionnaires were used in finding out some of the measures to be put in place to sort out any gap identified. Interview schedule on the other hand were used in finding out if the school was using IEP in teaching science subjects and any relationship on performance. Further, the researcher recorded aspects of teaching strategies being used by teachers in classroom with the aim of finding out if IEP was being incorporated in learning or not. This was done by use of video recorder and later analyzed according to major themes.

### **PILOT STUDY**

Before the actual study, the researcher carried out pilot study at Murang'a Secondary School for the Deaf. This was quite essential as it helped the researcher in estimating reliability and validity of the researcher instruments. Only Biology subject was used in the pilot study. The number of the respondents who were interviewed using questionnaire were; 3 biology teachers and 6 students. The researcher scored on the questionnaire manually. After a period of two weeks, the researcher again administered the same questionnaire to the same group of subjects. The responses were again scored manually. The findings of the study were then compared to determine the reliability of the questionnaire.

### **RELIABILITY AND VALIDITY**

According to Mugenda, (2008) validity is the accuracy, trust, worthfulness and meaningfulness of inferences that are based on the data obtained from the use of a tool or a scale for each construct or variable in the data. In this study, validity of research instruments was determined through professional judgment by the supervisors. On the other hand, reliability is the degree to which a research instrument yields the same results or data after repeated trials. This was achieved through test-re-test method where research instruments were piloted twice at Murang'a Secondary School for the Deaf.

### **DATA COLLECTION TECHNIQUES**

Teachers teaching sciences subjects were given a questionnaire in the staffroom to fill. They were also observed in their respective classes and both qualitative and quantitative data collected following observation guide prepared. Each class was observed twice a week for a period of one month. Brief discussions were also conducted by science teachers to exhaust all the information required for this study. Interviews with the head teacher was held at her own discretion and the venue decided by her within the period of the study. The researcher noted down important points of interview. Lastly students were given questionnaires to fill under the support of the researcher assistance in their classes. They were also observed in

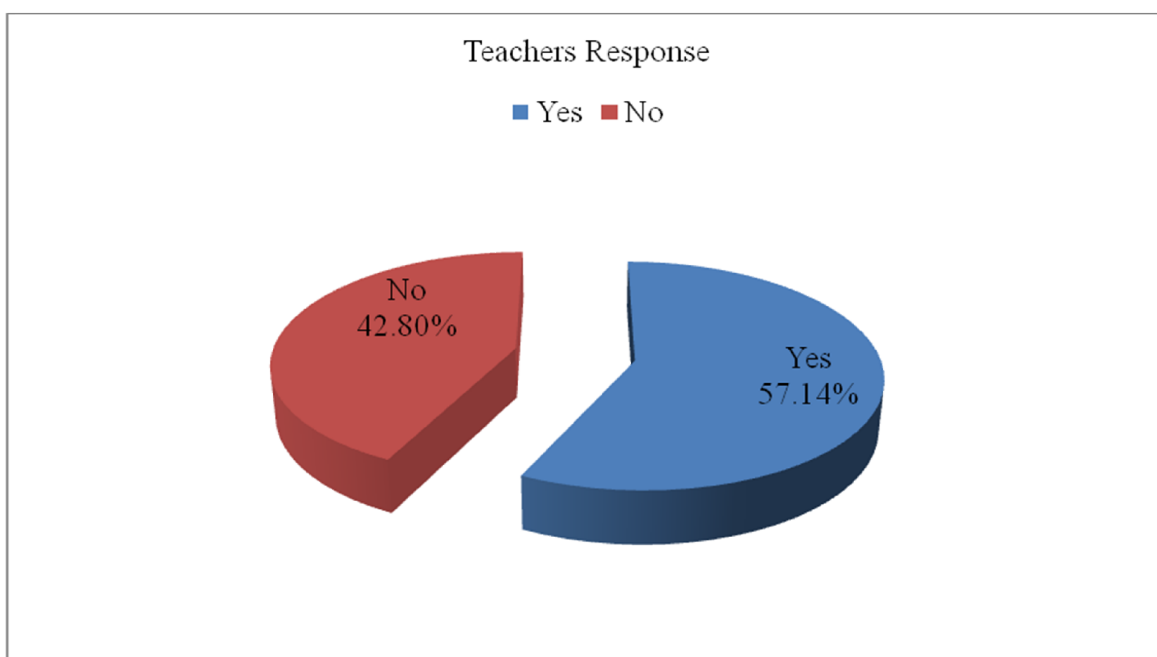
their respective classes on how they were participating in the learning process when different teaching strategies were being used.

**DATA ANALYSIS**

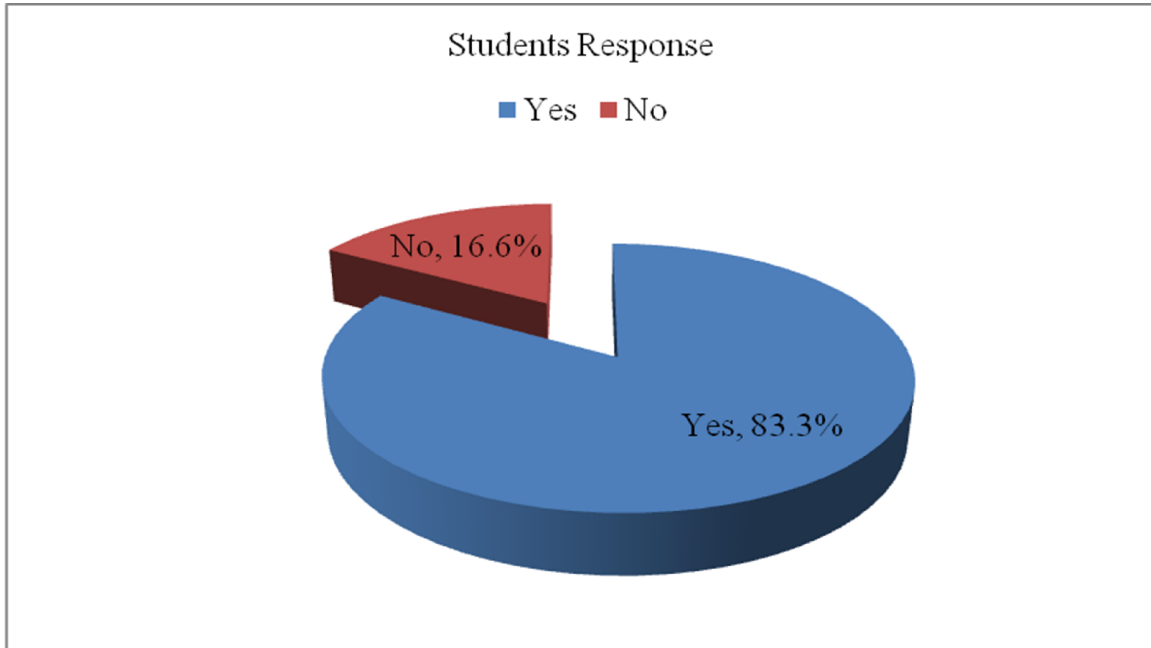
Data collected by the researcher was analyzed both quantitatively and qualitatively. Quantitative data from closed, open ended questionnaires and lessons observations schedules were analyzed and presented by descriptive statistics while qualitative data were analyzed based on major themes and then reported in narrative form.

**DATA ANALYSIS AND DISCUSSION**

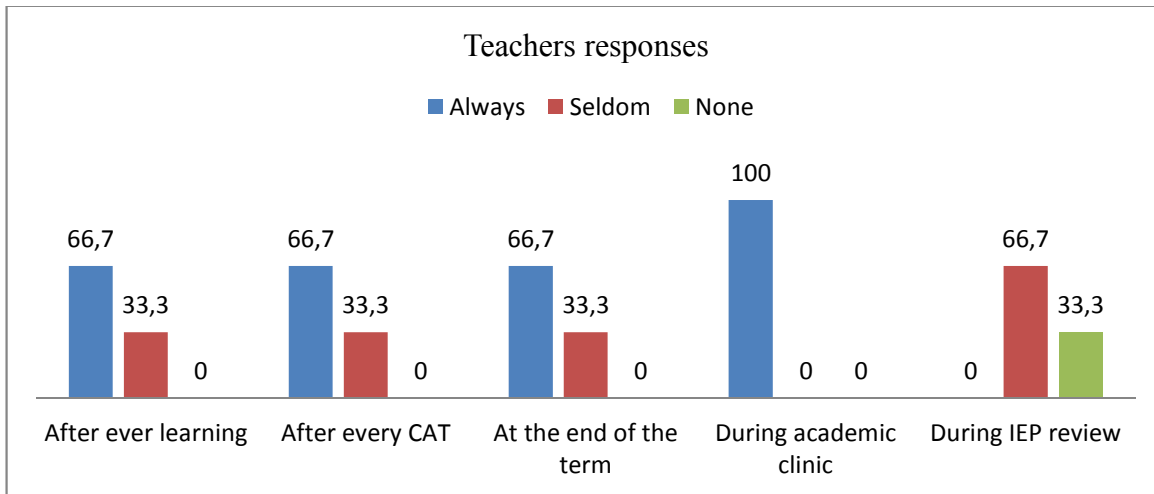
During data collection, teachers were asked to state if they were incorporating IEP in science class to monitor learners' performance or not. Their responses were as shown below;



Findings revealed 57.14% of teachers were incorporating IEP in their teaching to monitor learners' performance in sciences while 42.80% were not. Students were equally asked to state if they had an IEP or not. Their responses were as shown below;



From the findings, majority of the students (83.3%) reported having an IEP while 16.6% reported they did not have. Teachers were also asked to give frequency at which they discussed IEP with their students. Their responses were as shown below;



Sixty six point seven percent- 66.7% of teachers reported to have discussed IEP with their students after every learning, 33.3% did this seldom while 0% none. 66.7% reported to have discussed after every CAT, 33.3% seldom while 0% none. Sixty six point seven percent- 66.7% discussed at the end of the term, 33.3% did it seldom while 0% none. 100% discussed during academic Clinics, 0% did it seldom while, 0% none. Zero percent-0% discussed during IEP review 66.7% did it seldom while 33.3% none. Interview with the principal reported the school was using IEP in monitoring students' academic performance; though this was being used to a lesser extent.

Analysis of teachers' responses revealed majority of them (66.7%) discussed their IEP with their students after learning, CAT, at the end of the term and during academic Clinics. This higher percentage may have been attributed to normal routine procedures in school as marking of exercise books, follow up on students corrections in class work and doing revisions of continuous assessment tests which the teacher equated to IEP as there was no evidence to support their responses.

One hundred percent (100%), of teachers reported to have discussed their IEP with their students during academic Clinic. This may be true as it involved the parents. Interview with the Principal indicated teachers were using IEP in monitoring learners performance though this was being done to a less extend.

Observation in learning trend revealed that, though teachers maintained higher standards of academic learning which were not limited to academic Clinic and revision of continuous assessment tests, there was no documentary evidence to support existence of IEP in school. Most of them existed as brief case IEP which did not seem to follow IEP format expected of such learners. These findings supports Rittenhouse (2004), study on newly trained teacherswho establishes that, while they were typically energetic and willing to attempt to tackle new ideas, they often lacked the skills necessary for successful maintenance and development of individualized education program.

Students' responses were not utilised in this section since from the beginning, their responses seemed to address their personal convenient. Most of them seemed not to comprehend exactly what IEP meant even after being assisted by the research assistant. They equated it to continuous revision, academic Clinic which was being done in school as a parcel of addressing general inefficiencies in academics hence their inclusion here would have simply watered down the recommendations to be made.

## **CONCLUSION**

The study found out that, even though most teachers maintained higher standards of academic learning, most of them were not using IEP in their teaching as there was no file in school to support its existence. It was noted that most teachers did not comprehend the meaning of IEP and the format of writing it. Observation in teaching trends showed that most teachers equated IEP on normal routine class procedures as marking of exercise books, follow-up on students' corrections in class and doing revision of continuous assessment tests. This lack of understanding on planning and using of IEP had made students who required IEP to lag behind in sciences. Equally students seemed not to comprehend it. This was a clear indication that IEP was not being used in school,

## **RECOMMENDATIONS OF THE STUDY**

The study recommends that:

1. There is need for intensive immersion of teachers on IEP preparation which may include; organizing in-servicing teachers training Courses for teachers on IEP. This should be facilitated by MoEST in conjunction with KISE and any University offering Special Needs Education
2. There is need to review Policy on teacher recruitment where by only those trained to teach deaf learners are recruited to teach in deaf schools. Most of these teachers usually undergo intensive preparation where they are taught on how to plan and implement IEP in class. This puts them in a better position as teachers of the deaf students.
3. Quality Assurance and Standard Officers in Ministry of Education Science and Technology (MoEST) should intensify inspection of schools for the deaf to ensure teachers were using Individual Education Program in their teaching.

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