

INFLUENCE OF TEACHING AND LEARNING RESOURCES ON MATHEMATICS PERFORMANCE AMONG LEARNERS WITH HEARING IMPAIRMENT IN SPECIAL SECONDARY SCHOOLS

¹OWIKO CLEOPHAS OWINO, ²DR OMOKE CHARLES, ³DR MWEBI BENARD

^{1,2,3} JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

Abstract: The purpose of the study was to explore the influence of teaching and learning resources on mathematics performance among learners with hearing impairment in special secondary schools in Kenya. The study was based on Vygotsky's Zone of Proximal Development Theory and a Conceptual framework. The multiple case study research design was adopted in the study. The study was conducted in three secondary schools for the hearing impaired in the lake region (formerly Nyanza Province) in Kenya. The target population was 54 respondents that comprised of 3 principals, 12 Mathematics teachers, 9 Curriculum Support Officers 6 Parents representatives and 24 form 3 students. The study sample size was 47 respondents that comprised of 3 principals, 8 Mathematics teachers, 6 Curriculum Support Officers students, 6 Parents Teachers Association representatives and 24 form 3 students. Saturated, stratified and purposive sampling techniques were employed to pick out the sample. The research tools were interviews, observation, document analysis and Focus Group Discussion. The researcher collaborated and consulted with his supervisors and other expert lecturers in the school of education to validate the instruments. Trustworthiness of qualitative data was ensured using triangulation, thick description and member checking strategies. Qualitative data collected was analyzed using thematic analysis. On the issue of influence of teaching and learning resources on mathematics performance, the study found out that there were inadequate resources being used. The themes that emerged were Inadequate use of resources, Poor teacher technical skills, Lack of Hearing Aids, Few mathematics textbooks, Lack of geometrical sets and calculators and Inadequate Four figure mathematical tables. The study concluded that the teaching and learning resources were inadequate. It was recommended that the government and parents should provide these critical teaching and learning resources to students having hearing impairment so as to improve performance in subjects like mathematics. A study on the influence of the degree of hearing impairment would expound the understanding of the current study.

Keywords: Learners with hearing impairment, Mathematics performance, Teaching and learning resources, Special secondary schools.

1. INTRODUCTION

1.1 Background to the study:

The hearing impaired children, just as hearing children, are supposed to learn mathematics in order to live as successful, effective and independent individuals in the society. Knowing mathematics well actually means having mathematical knowledge. Mathematical knowledge is a combination of information used in counting, calculating, solving routine mathematical problems, or conducting mathematical related findings (Tanridiler et. al, 2015).

International Journal of Novel Research in Education and Learning

Vol. 5, Issue 4, pp: (89-103), Month: July - August 2018, Available at: www.noveltyjournals.com

Studies show that children with hearing-impairment can learn mathematics just as their hearing peers but at a delayed pace (Traxler, 2000 & Tanridiler, 2015). On the other hand studies show that, principle and elements of balanced mathematics instruction (BMI) are important for students with hearing impairment (Stewart & Kluwin, 2001; Nunes & Moreno, 2002; Pagliaro, 2006). It can be argued that, by adopting such principles all children are capable of learning and performing mathematics problems.

Possible ways and means in learning mathematics must be sought at all levels of education. This is because it is core in scientific, technological development and research. The Vision (2030) well spells it out that Kenya is aiming to be a regional centre of research and development in new technologies. Children with special needs especially, those with hearing impairment, need to be encouraged in the learning of such a subject like mathematics. This is through offering them the opportunities to do so. Such opportunities include for example; problem based learning, that is, what kind of mathematics problems help students develop deep, conceptual understanding (MacMath, Wallace & Chi-2009), encouraging cognition and self-interest in solving problems (Blanco, Barona & Carrasco, 2013), teachers role in learning the subject-mathematics by the students (Shore & McNeil; 2014), improving basic mathematics instructions through technology resources (Murray, Pacuilla and Helsel; 2007), the use of semantics in improving performance in mathematics (ACARA, 2005), which directly reflects on linguistic variables.

The position of mathematics in education cannot be underestimated. Globally, most countries give special attention to the teaching and learning of mathematics. It is taken as an opener to employment and technological advancement (Murray *et.al.* 2001). Internationally, mathematics has been considered as a top priority subject together with reading. It is argued that mathematics is the foundation for success in a variety of content areas during a child's educational experience. In addition it is reported that Mathematics is the path towards the wider job market (London derry School District, 2007). The report states that students who take a rigorous K-12 mathematics sequence are more likely to go to college than those who do not. In the job market, the report further states that students who have strong mathematics background are more likely to be employed and earn 38% more per hour than those with insufficient skills in algebra, geometry, measurement, and probability.

Mathematics is crucial not only for a person's success in school, but also in being an informed citizen, being productive in one's chosen career, and in personal fulfillment. In today's technology driven society, greater demands have been placed on individuals to interpret and use mathematics to make sense of information and complex situations. As a result, the Londonderry School District (2007) in England, places the understanding, application of numbers and operations, algebra, geometry, measurement, data analysis, problem-solving, and reasoning skills as top priorities, all of which being the subsets of mathematics.

In reference to learners with hearing impairment, the issue of difficulties involved in mathematics has been studied by various scholars who have given reports on their poor performance. Scholars like Maxon and Brackets (1986) conducted a comparative study in USA as to whether deaf children and their hearing counterparts performed the same in mathematics. They detected low performance in mathematics by children with hearing impairment as compared to their regular counterparts. They argued that this was not due to cognitive difference but eluded this to linguistic deficit. Moores, (2000) in USA and Foisack, (2003) in Hongkong both conducted their studies comparing the performance of deaf students and the hearing peers in mathematics. The studies also indicated that deaf students achieved much lower results on tests in mathematics than hearing students do; an indication of difficulties experienced by the students with HI in learning and performing mathematics.

1.2 Statement of the problem:

Consistent low performance of learners with hearing impairment in mathematics is a worrying phenomenon in the education compared to the regular learners. A study on influence of teaching and learning resources on performance of mathematics among the hearing impairment was undertaken with a view of identifying the causes of such dismal results.

1.3 Purpose of the study:

The purpose of this study was to explore the influence of teaching and learning resources on performance of mathematics among the hearing impairment in special schools.

International Journal of Novel Research in Education and Learning

Vol. 5, Issue 4, pp: (89-103), Month: July - August 2018, Available at: www.noveltyjournals.com

1.4 Objectives of the study:

The objective of the study was to establish the influence of teaching and learning resources on mathematics performance among learners with hearing-impairment in special secondary schools.

1.5 Research questions:

The following research question that guided the study was: How do teaching and learning resources influence mathematics performance among learners with hearing-impairment in special secondary schools?

1.6 Significance of the study:

The study might be useful to Teachers Service Commission, Kenya Institute for Curriculum Development (KICED), the students with hearing impairment and mathematics teachers.

1.7 Scope of the study:

The study concentrated in explored the influence of teaching and learning resources on performance in Mathematics by learners with hearing impairment. The study was conducted only in special secondary schools for the deaf in selected counties in the western region (Siaya, Kisii and Migori), Kenya.

1.8 Theoretical framework:

This study employed Vygotsky's Zone of Proximal Development (ZPD) to guide this study. The theory, if applied in teaching mathematics, might induce the teachers to applying appropriate pedagogical strategies as to improve the performance in the subject among the children with hearing-impairment. Teaching mathematics in the child's zone of proximal development (Christmas, Kudzai and Josiah, 2012) is viewed as one way of improving performance in mathematics. Through this theory, the learning is mediated and scaffolded by the teacher, expert adult or knowledgeable peer; making it more meaningful, easier, manageable, effective and efficient. But as there are individual differences among the learners, it becomes difficult (challenging) for teachers to identify every learner's zone of proximal development. Christmas *et.al* (2012), remark that despite this limitation or challenge, the ZPD, if appropriately applied could improve mathematics teaching and learning in the schools. The significance of the ZPD is that it enables penetration into the causal-dynamic and genetic connections determining the process of mental development (Chaiklin, 2003; Obhukova and Korepanova, 2009).

2. LITERATURE REVIEW

Influence of teaching-learning resources on performance in mathematics by learners with hearing-impairment in secondary schools:

Adeogun and Osifila (2008) conducted a study in Nigeria to examine the impact of teaching and learning resources on students' academic performance. A similar study was also conducted in Libya by Al Agil *et.al*, (2012). Both studies revealed that there was a significant impact of educational resources on students' academic performance. From the findings it was argued that with inadequate or no application of teaching and learning resources, the learners tend to lag behind with reference to concept formation and skills development in mathematics, hence, low achievement. The above reviewed study was carried out in Nigeria and Libya but not in Kenya where the present study is to be conducted. In other perspectives, a research can be conducted to determine the similarities or differences of some phenomena given different situations, perspectives, contexts and /or environmental make-ups (Orodho 2005)-a base for this study.

Korir & Kipkemboi (2014), Kosgei, (2015) in different studies remark that management of physical resource materials and human resources plays an important role in the school's academic achievement and that, passing examination is a measure of how resources have been used in the learning process, a bit of elaboration is worthwhile, which is the essence of this study. Physical resources reflect on the schools building facilities like the classrooms: standard sized and well furnished with the necessary equipment. Materials are such resources whose values are consumable in the course of teaching and learning. Various types include pieces of chalk (or in some schools the marker pens), colours and paints, exercise and textbooks. The human resources in any school automatically become the teachers and even learners themselves. From his work, Kosgei (2010) indicates that, the major resources utilized in science and mathematics are such

as pieces of chalk, models, textbooks, computers and projectors, compact discs (CD), flash drives, periodic tables, charts, laboratory equipment among others. He remarks that performance, no matter how well educated and professional teachers are; need teaching aids and conducive physical environment for themselves and their learners. Kenya, like any other country has experienced many challenges in the performance of science and mathematics as core curriculum subjects. This is the other significance of the current study and more so, the performance of students with hearing impairment in mathematics at secondary schools for the deaf. Are resources some of the contributors to their dismal performance in mathematics at KCSE exams? Text books with other schools' physical facilities, Munda, Tanui and Kaberia (2002) state that physical facilities contribute positively to students' academic performance. Lack of such resources, would result to poor performance in the subject, for instance in mathematics. The current research is planned to confirm or dispel this.

Yara and Otieno (2010) studied the effects of teaching and learning resources on academic performance in secondary school mathematics in Bondo Sub-County, Kenya. They attributed poor performance in mathematics by secondary school students to lack of use of good teaching and learning resources during mathematics lessons. Teachers in the school system can be considered as a form of resource that is, human resource (Hiuhu, 2007). The shortage of mathematics teachers in secondary schools due to high attrition rate (Yara and Otieno, 2010), is a challenge in teaching and learning mathematics. The studies reflected on the performance of regular secondary school students but not performance in mathematics by the learners who are hearing-impaired. The current study is considering the determinant factors affecting the performance in mathematics by learners who are hearing-impaired in secondary schools for the deaf in the lake region, Kenya.

Mbugua *et.al* (2012) had underscored the influence of teaching/learning resources on the performance of secondary school students in mathematics in Kenya. Their findings indicated that textbooks were leading with 94.1% followed by mathematics geometrical sets at 28.4% colored chalk, 25.3% while charts and mathematical models accounted for 10.5 and 6.2% respectively. Quoting Psacharapoulos and Woodall (1985), they stated that textbooks are major input for performance in examinations. The current researcher views it that, it is from the text books where the content areas to be covered and also, the concepts and skills to be learnt and applied in problem-solving (in mathematics) are specified. The textbooks, particularly the teachers' guide books and the syllabus also specify the time for covering a particular content area, methodology and teaching strategies necessary for the content coverage. The availability of textbooks and qualified teaching staff in a secondary school (Mbugua, et, al, 2012) is strongly related to high achievement among children from lower income families especially those from rural boarding schools. Some scholars have summarily considered the availability of teaching/learning resources as the pivot to greater academic achievements in the schools.

The studies, for example by Eamon,(2005), Adeogun and Osifila (2008) and Al Agil *et.al.*(2013) concentrated on the significance of teaching /learning resources in enhancing academic achievement among the regular students in schools. Furthermore, they were conducted other countries with different educational policies, layouts and context. The current study is also particular on the influence of such resources on the performance of learners with H.I. on mathematics which was not addressed by the studies above. Korir & Kipkemboi (2014) and Kosgei (2015) also conducted the studies on the management of physical resource materials and human resource and their role in enhancing academic performance among learners at/in secondary schools in Kenya. The studies underscored the role of such resources with reference to the regular students in regular secondary schools. This is in contrary to the current study that is concerned with the role they play on influence or effect the performance of the hearing –impaired learners in Mathematics at K.C.S.E exams.

3. RESEARCH METHODOLOGY

3.1 Research Design:

The study employed a multiple case study research design to conduct investigations in this study. A case study method enables a researcher to closely examine the data within a specific context (case). In most cases a case study design selects small geographical areas or a very limited number of individuals as the subjects of the study (Zainal, 2007). Case studies distinguish themselves from experiments especially in control. A true case study requires the researcher to study a phenomenon without affecting the study subject at all. In this study the performance in mathematics by learners with hearing impairment was investigated from three cases, that is, the three special secondary schools for the deaf in Nyanza region.

International Journal of Novel Research in Education and Learning

Vol. 5, Issue 4, pp: (89-103), Month: July - August 2018, Available at: www.noveltyjournals.com

3.2 Location of the Study:

The study was carried out in Western Kenya and covered three counties-Kisii, Siaya and Migori Counties.

3.3 Target Population:

The target population was 54 respondents that comprised of 3 principals, 12 Mathematics teachers, 9 Curriculum Support Officers 6 Parents representatives and 24 form 3 students.

3.4 Sample size, Sample and sampling techniques:

The study sample size was 47 respondents that comprised of 3 principals, 8 Mathematics teachers, 6 Curriculum Support Officers students, 6 Parents Teachers Association representatives and 24 form 3 students. Saturated, stratified and purposive sampling techniques were employed to pick out the sample.

3.5 Research Instruments:

The study employed interview schedules, observation checklist, focus group discussion guide and document analysis guide to collect data.

3.6 Trustworthiness of qualitative data:

Validity and reliability of qualitative data was ascertained through Lincoln and Guba (1985) qualitative paradigm: Credibility; Transferability; dependability; and conformability.

3.7 Data Analysis:

The data were reflectively analyzed starting from the time they were collected while still in the field (Creswell, 2009; Gall *et. al.*, 2007; Maxwell, 2005). Thematic analysis was then done on the data.

3.8 Ethical Considerations:

The ethics of research were upheld by researcher such as accessibility and acceptability, protecting participants from harm, obtaining informed consent of participants, anonymity and confidentiality and respecting the privacy of participants.

4. RESULTS AND DISCUSSION

Results and discussion on Influence of teaching and learning resources on mathematics performance among deaf learners:

The study investigated the influence of teaching and learning resources on the mathematics performance among deaf learners. The themes that emerged were Inadequate use of resources, Poor teacher technical skills, Lack of Hearing Aids, Few mathematics textbooks, Lack of geometrical sets and calculators and Inadequate Four figure mathematics tables .

Inadequate use of resources:

Most respondents were of the opinion that there were many resources in schools which could be used to assist deaf learners but in most cases, they were not being used by the teachers frequently. The teachers did not have time to use the resources that were available in the schools and this negatively influenced the mathematics performance. In some schools, it was found that some resources were available and could be used in classroom for teaching but, they were under custody in the offices. Some arguments posited on this (observation results and document analysis outcome) were that, the school infrastructures were still under construction which on completion would facilitate their applications or use in classrooms. Some respondents therefore reported that:

"We have so many resources in school such as computers, hard discs and projectors but teachers don't use them in most cases" (Principal, 2)

"In most classrooms, there are several resources that can be used for teaching deaf learners but you will realize that our teachers rarely use such resources in their teaching"(Maths teacher, 4)

"We only see mathematics textbooks, four-figure tables, geometrical sets and some realiers/models/objects" (Learner 3, FGD 1)

The excerpts, it can be concluded that teachers did not make time to use the available resources to teach the deaf learners during lessons. This could have affected the mathematics performance negatively. In addition, the data obtained from the observation checklists also revealed that several learning resources were lacking in schools for the deaf. Most schools had inadequate materials which also lowered the mathematics performance of deaf learners. This finding agrees with Adeogun and Osifila (2008) who reported that with inadequate or no teaching/learning resources, the learners tend to lag behind with reference to concept formation and skills development in mathematics, hence, low achievement. Similarly, Yara and Otieno (2010) attributed poor performance in mathematics by secondary school students to lack of use of good teaching/learning resources during mathematics lessons. In addition, the study by Al Agil, *et.al.*, (2012), revealed that there was a significant impact of educational resources on students' academic performance. They argued that with inadequate or no teaching/learning resources, the learners tend to lag behind with reference to concept formation and skills development in mathematics, hence, low achievement. From this study it is realized that the performance of learners with hearing impairment in mathematics was grossly lowered due to lack of use of teaching/learning resources during the lessons.

Poor teacher technical skills:

Technical skills refer to the talent and expertise a person possesses to perform a certain job or task. In this study, it refers to the knowledge and abilities needed to accomplish mathematical, engineering, scientific or computer-related duties, as well as other specific tasks such as the management and use of audiological systems during teaching. In the present study, most participants reported that teacher lacked technical skills to utilize the available resources which could assist them teach the deaf learners well. Sometimes, it was just lack of devotion to use them. The teachers did not have the capacity to use some of the resources in school because of lack of knowledge or devotion. Some respondents reported that:

"The YF system is in school and teachers cannot use it because of their limitations. This has affected learning of mathematics greatly because it remains abstract in most cases" (Principal, 2)

"The government of Kenya through the ministry of education has given many schools the resources to be used by the deaf learners, but from the look of things, teachers shy away from using them totally" (CSO, 2)

From the above interview reports, it can be realized that lack of technical skills among teachers has negatively affected the mathematics performance of deaf learners. In addition to this, the results from document analysis item revealed that, the schools had technological appliances which could be used but were still not installed in the classrooms. The teachers therefore were not accessing them for teaching. This means that technical skills of teachers are paramount in their use of such resources which would in turn lead to better mathematics performance. It also reflects that devotion and dedication among teachers could add value to the learners' performance in a subject like mathematics. The schools should also have appropriate infrastructure to facilitate the installation of the appliances and their usage.

In teaching a subject like mathematics, Kosgei (2010) emphasized the use of technological resources like computers and projectors, compact discs (CD), flash drives, periodic tables, charts, laboratory equipment among others. He remarks that performance, no matter how well educated and professional teachers are; need teaching aids and conducive physical environment for themselves and their learners. In this respect, lack of the use of such technological resources when teaching mathematics accounted for low performance in mathematics realized among these learners.

Lack of Hearing Aids:

A hearing aid is a small electronic device that you wear in or behind your ear. It makes some sounds louder and clearer so that a person with hearing loss can listen, communicate, and participate more fully in daily activities. A hearing aid can help people hear more in both quiet and noisy situations. In the present study, it was reported that most schools lacked hearing aids, (Observation guide report) and even in cases where they were available in schools, the learners were not using them. It was realized that learners had developed negative attitudes towards using them in most cases (Focus group discussion report). This was one of the resource factors contributing to low performance in mathematics by these students. Some respondents reported that:

"We don't have hearing aids as at now in our school, but even the time we had them, our deaf learners never used them well. They had developed negative attitudes towards using them at school for cosmetic reasons" (Maths teacher, 5)

“Well....we have had several cases where deaf learners refuse to use hearing aids. Also, we don't have regular supply of hearing aids in the school”(Maths teacher, 7)

“They are not good for us. We learn not with them. Good for standard 1 & 2 children” (Learner 4, FGD 2)

From the above reports, it can be concluded that negative attitude towards hearing aids and lack of them in some schools lowered performance in mathematics. This was because the hearing impaired learners, especially the hard of hearing, had difficulty in understanding concepts without the devices. In agreement, Rumba (2014) revealed that, inadequacy or lack of such resources like hearing aids in such schools lowered the performance at KCPE. In a similar note, Muguongo, (2016) found that inadequate provision of auxiliary services including hearing aids, were agents of low performance among hearing impaired students at KCPE exams. The finding of this study is in concurrence with the above studies that inadequate use of hearing aids also contribute to low performance in examinations by learners who are hearing impaired.

Few mathematics textbooks:

The issue of few number of mathematics books was also reported as a theme on the factors that influenced mathematics achievement among deaf learners. Most teachers who were interviewed reported that, there were still few mathematics text books for deaf learners in schools despite the attempts by the Ministry of Education to purchase more books for schools. The deaf learners had to share mathematics textbooks in most cases and this limited time for maximum concentration among the deaf learners. This negatively affected the performance in mathematics among the deaf learners in most cases. Some respondents reported that:

“Our learners share maths books in class during lessons. It's difficult at times to assign each learner own book as the books are few. This has limited teachers and learners efforts to perform in mathematics”(Maths Teacher, 3).

“For a teacher, the number of maths books should be adequate so that the assignments can be easy to give and mark on time. But in most cases in school, we have shortage of maths books for our deaf learners and it has negatively affected their performance in mathematics”(Maths Teacher, 4).

Well...mmmmhhh....you see without adequate maths text books, teaching of maths is difficult and learning cannot be individualized at all with that scenario. In our school, we have few maths books and even the four-figure tables are lacking for some students. This means that the deaf learners must share them, and this has made them not to perform well in mathematics.” (Maths Teacher 2).

The observation results from the three schools indicated that some students were sharing books to the ration of 1:3 or 1: 4 during the lessons. From the document analysis results, there were no specific records to ascertain the textbook flow to student and back to the distributing office. In such cases there were no certainties as to whether all students were effectively using the textbooks. From that result guide also, supplementary books were not adequate with students.

From the three interview extracts and observation/document analysis reports stated above, it can be concluded that the few number of textbooks including the four-figure tables and supplementary books in schools made it difficult for maths teachers to teach and give the assignments as expected in the subject. The teachers thus could not give many assignments as learners have to share books to do them. This, as per the current study, lowered the mathematics performance in schools. In agreement, Mbugua et. al. (2012) in their study found that textbooks as a resource, were leading with 94.1% followed by mathematics geometrical sets at 28.4% colored chalk, 25.3% while charts and mathematical models accounted for 10.5 and 6.2% respectively.

Similarly, Psacharopolous and Woodhall (1985), stated that textbooks are major input for performance in examinations. The current researcher views it that, it is from the text books where the content areas to be covered and also, the concepts and skills to be learnt and applied in problem-solving (in mathematics) are specified. The textbooks, particularly the teachers' guide books and the syllabus also specify the time for covering a particular content area, methodology and teaching strategies necessary for the content coverage. The availability of textbooks and qualified teaching staff in a secondary school (Mbugua, et, al, 2012) is strongly related to high achievement among children from lower income families especially those from rural boarding schools. Some scholars have summarily considered the availability of teaching and learning resources particularly the textbooks as the pivot to greater academic achievements in the schools.

Lack of geometrical sets and calculators:

Most participants reported that there was shortage of geometrical sets and calculators which negatively affected the performance of students with hearing impairment in mathematics. Some deaf learners could not get access to geometrical sets, and this affected their level of individual practice in solving mathematical problems during lessons and at home. It was also reported that some deaf learners lacked calculators which were necessary in the solving of mathematics problems. From document analysis, it was evidence that records pertaining to supply of geometrical sets and calculators was not officially censored. There were no records to show that the school was ordering and supplying these items to the students. One of the principals reiterated that such tools/materials were the responsibility of the parents. During classrooms observations, (all the three schools) some students did not have these gadgets and had to beg from colleagues when the need to use them arose. These affected how these deaf learners got engaged with mathematics as a subject and eventually it has negatively affected the performance in mathematics. From interviews, some of the respondents reported:

“In our school, we have few facilities like calculators which can help us to practice mathematics during lessons. We have to share them in most cases and this has really affected us negatively in mathematics”(Student 6 FGD, 3)

“I see...we lack geometrical sets and you know they are crucial in the enhancement of mathematics performance. This has hindered the deaf learners from improving in mathematics because we have nothing to help us”(Maths Teacher, 3).

“Materials to help deaf learners do mathematics are a big problem. Learners need sets and calculators which are very crucial in the practice and solving of mathematical problems...this really affects us in class both in school and home and the maths performance can't go up in a big way.(Maths Teacher, 1).

“our parents are adamant buying for us geometrical sets and calculators...parents say the school to give us these things” (student 3 FGD 1).

From the interview excerpts above, it was revealed that shortage of learning materials like geometrical sets and calculators had affected the teaching and learning of mathematics among deaf learners. The issue of teaching learning resources had been echoed by different scholars. Availability and appropriate use of these resources added value in performance of mathematics by students. The other way round, lack of these resources by students lowered their performance. In agreement, Adeogun and Osifila (2008) in their study revealed that there was a significant impact of educational resources on students' academic performance. From the findings it was argued that with inadequate or no teaching/learning resources, the learners tend to lag behind with reference to concept formation and skills development in mathematics, hence, low achievement. In a similar note, Al Agil *et.al* (2012) reported that lack of teaching learning resources when learning a subject like mathematics lowered the students' performance. Murray, Silver-Pecuilla & Helsell (2007) had argued that the use of calculators was a necessity for mathematics instruction in classrooms. Lack of such resources therefore impacted in low performance in the subject by the learners. The current study revealed that the use of such resources like the calculators and geometrical sets were lacking during maths lessons; most of the student had to beg from their colleagues. In effect this resulted into low performance in the subject. This is an area that has to be addressed before deaf learners can attain higher grades in mathematics.

Inadequate Four figure mathematics tables:

Most participants reported that deaf learners in schools lacked four figure mathematical tables and this affected the quality of practicing mathematics during lessons. The participants argued that lack of maths tables hindered deaf learners from internalizing concepts in the subject. The use of the four-figure mathematics tables is nowadays emphasized in mathematics lessons in high schools. During classroom observations, it was realized that most students did not have these resource to assist them solve problems in mathematics. From document analysis in the study schools, no records were available reflecting their provision by the schools. It was an entity left for the parents. Again, the students in the focus group discussion stated that their parents were not very much in a position to supply the items. The learners therefore didn't have enough time to use such resources and this negatively affected their performance in mathematics. Some of the participants reported that:

“In our school, we have very few maths tables which can't help deaf learners to practice mathematics. In ideal situation, each learner is meant to have own material but in this school, we lack such facilities and as such the maths grades have been low” (Maths Teacher, 7)

International Journal of Novel Research in Education and Learning

Vol. 5, Issue 4, pp: (89-103), Month: July - August 2018, Available at: www.noveltyjournals.com

“Lack of facilities such as maths tables affects the performance in mathematics. The deaf learners have to share them while in class and they will lack time for doing practice and eventually maths grades have become low throughout” (CSO, 2).

From the interview excerpts above, it can be concluded that inadequate mathematical tables has hindered the improvement in mathematics performance among deaf learners. The deaf learners are not in a position to spend more time practicing mathematics in school and finally this has lowered the mean grades that are achieved by deaf learners in mathematics. Among the resources being used for teaching mathematics, Mbugua et. al. (2012) found that textbooks as a resource, were leading with 94.1%. In Kenya today, mathematics textbooks go together with the use of four figure maths tables. Without the four-figure mathematics table, solving problems in mathematics in secondary schools is not possible. Just as the calculators and geometrical sets, there is need that these materials be availed to all students during a mathematics lesson to enhance their performance.

5. SUMMARY, CONCLUSION AND RECOMMENDATIOINS

5.1 Summary of Findings:

The study investigated the influence of teaching and learning resources on the mathematics performance among deaf learners. The themes that emerged were Inadequate use of resources, Poor teacher technical skills, Lack of Hearing Aids, Few mathematics textbooks, Lack of geometrical sets and calculators and Inadequate Four figure mathematics tables.

5.2 Conclusion of the findings:

The study concluded that the teaching and learning resources such as Hearing Aids, Few mathematics textbooks, geometrical sets and calculators and Four figure mathematics tables were inadequate.

5.3 Recommendations:

It was recommended that the government and parents should provide these critical teaching and learning resources to students having hearing impairment so as to improve performance in subjects like mathematics.

5.4 Suggestions for further research:

- i) The influence of degree of hearing impairment on mathematics performance by learners who are hearing impaired.
- ii) The effect of the administrative time of the heads of institutions on performance in mathematics by the learners who are hearing impaired.
- iii) The influence of learners attitudes on the performance in a subject (Mathematics)

REFERENCES

- [1] Al- Agil, M.G.Z: Bin Mamat, M, Abdullah, L and Maad, H.A. (2012): *The factors Influencing Students' achievement in mathematics: A case for Libyan Students* Kuala Lumpur: IDOSI publication
- [2] Aiken, L.R. (1972): *Language factor in learning mathematics” In Mathematics Education Report*, Columbus, Ohio: ERICS
- [3] Adler J, Setati M. (2001): *Between languages and discourses*: Code964 Educ. Res.
- [4] Braswell-Burris, P. (2010). *Factors Affecting the Educational and Personal Success of Deaf or Hard of Hearing Individuals*. Doctorate of Educational Leadership, San Diego State University.
- [5] Adeyemo A. R; Oladipupo A. & Omisore A.O (2013). *International Journal of Humanities and Social Science Invention*: Teachers` Motivation on Students` Performance in Mathematics in Government Secondary Schools, Makurdi Lg. Area.
- [6] Ashcraft, M. H. & Kirk, E. P. (2001): *The relationships among working memory, mathematics anxiety, and performance. Journal of Experimental Psychology: General*, 130(2), 224–237.

International Journal of Novel Research in Education and Learning

 Vol. 5, Issue 4, pp: (89-103), Month: July - August 2018, Available at: www.noveltyjournals.com

- [7] Adeogun, A. A and Osifila G.I (2008): *Relationship between educational resources and students academic performance in Lagos state Nigeria*, *International journal of Educational management (IJEM)*, 5 &6:144-153
- [8] Aloraini, S. (2012). The impact of using multimedia on students' academic achievement in the College of Education at King Saud University. *Journal of King Saud University - Languages and Translation* Volume 24, Issue 2, July 2012, Pages 75-82.
- [9] Aloraini, S. (2012). The impact of using multimedia on students' academic achievement in the College of Education at King Saud University. *Journal of King Saud University - Languages and Translation* Volume 24, Issue 2, July 2012, Pages 75-82.
- [10] Al-shammari, M., Asma Ashankyty, Najmah Al-Mowina, Nadia Al-Mutairy, Lulwah Al-shammari, Anfal al-qrnas, Susan AmiN (2014). The Perceived Effects/Impacts of Auditory Deficiency on the Social and Academic Behavior of Students in Hail, Saudi Arabia. <http://pubs.sciepub.com/education/2/1/10/>
- [11] Berliner, D.C. (1990): what's all the fuss: About instructional time? New York: Teacher's collage press
- [12] Braswell-Burris, P. (2010). *Factors Affecting the Educational and Personal Success of Deaf or Hard of Hearing Individuals*. Doctorate of Educational Leadership, San Diego State University.
- [13] Becta, J. (2009). *An exploration of parent's engagement with their children's learning*. London, Metropolitan University.
- [14] Creswell, J.W & Plano, C.V.L. (2011) *Designing and Conducting Mixed Methods Research*. (2nd Edition) London: Sage
- [15] Cohen, L. Manion, L., & Morrison, K. (2007): *Research methods in education*. New York Routledge
- [16] Chaiklin, S. (2003): The Zone of Proximal Development in Vygotsky's Analysis of Learning and Instruction. In Kozulin, A., Gindis, B., Ageyev, V. & Miller, S. (Eds.), *Vygotsky's Educational Theory and Practice in Cultural Context*. Cambridge: Cambridge University Press.
- [17] Calderon, R. (2016). *Parental Involvement in Deaf Children's Education Programs as a Predictor of Child's Language, Early Reading, and Social-Emotional Development*. <http://www.lsl.usu.edu/files/Calderon%27parental%27involvement.pdf>
- [18] Davis-Kean and Schnabel, K. U. (2004) : 'The impact of socio-economic characteristics on child outcomes: The mediating role of parents' beliefs and behaviors'. *Child Development*, Under review, in Feinstein, L.
- [19] Duckworth, K, and Sabates, R (2004) A Model of the Intergenerational Transmission of Educational Success. *Wider Benefits of Learning Research Report 10*. London: Institute of Education.
- [20] Delquardi, J., Greenwood, C. R., Whorton, D., Carta, J. J., & Hall, R. V. (1986): Classwide peer tutoring: *Exceptional Children*, 52,535-542.
- [21] Durkin & Shire, B (1995): *ambiguity in mathematical context*. Philadelphia Open University Press
Everline Nyokabi Maina¹, Peter Adoyo Oracha¹, Francis Chisikwa Indoshi (2011): *Curriculum factors influencing performance of deaf students in mathematics quantitative and qualitative research*. New Jersey: Pearson: Merrill Prentice Hall.
- [22] El Nokali, N. E., Bachman, H. J., & Votruba-Drzal, E. (2010): *Parent involvement and children's academic and social development in elementary school*. *Child Development*, 81(3), 988-1005
- [23] Ezema, Edith Obianuju (2014). *Effect of Total Communication on Academic Achievement Of Pupils With Hearing Impairment In Enugu State*. Department of Educational Foundations (Special Education) University Of Nigeria, Nsukka.
- [24] Epstein, J. L. & Sanders, M. G. (2006): *Prospects for change: Preparing educators for school, family, and community partnerships*. *Peabody Journal of Education*, 81(2), 81-120

International Journal of Novel Research in Education and Learning

 Vol. 5, Issue 4, pp: (89-103), Month: July - August 2018, Available at: www.noveltyjournals.com

- [25] Guba, E. G., Lincoln, Y.S. (2005): *Paradigm dialog*. In E.G Guba 9 (Ed.) The paradigm dialog (pp.17-30). Newbury Park, C. A: Sage.
- [26] Gilfeather M. and Rogato J (1999) : mathematics Defined: Mathematics experience Based Approach an Introduction confidence and performance a review of the literature *General Education Classes*.The Degree Doctor of Philosophy in the Graduate School of the Ohio State University
- [27] Gay, L., Mills, G., & Airasian, P. (2006): *Educational research: Competencies for analysis and applications*. New Jersey: Pearson Education, Inc.
- [28] Grinsven, L.V, and Tillema, H.(2006). Learning opportunities to support student self-Regulation: co & McNeil's (2014).Teachers as stakeholders in mathematics educationresearch: Times Vol 11, no.1, pg 135comparing different instructional formats. *Educational research*, 48, 77-91
- [29] Harris, A. and Goodall, J. (2007): *Forthcoming: "Do Parents Know they Matter? Parental\Engagement and Educational Achievement: Reviewing theEvidence*. Alma Harris and Dr Janet Goodall Engaging Parents inRaising Achievement Do Parent Know They Matter? Research Report DCSF-RW004 a research project commissioned by theSpecialist Schools and Academies Trust University of Warwick
- [30] Jarry-Shore, M Dufour, R. (2005): *on common ground: The power of professional teaching communities*, Bloomington, Indiana.
- [31] Jeynes, W. H. (2005). A meta-analysis of the relation of Parental Involvement to urban elementary school student academicachievement. *Urban Education*,40,237-329.
- [32] Jeynes, W. H. (2005). A meta-analysis of the relation of Parental Involvement to urban elementary school student academicachievement. *Urban Education*,40,237-329.
- [33] Jennifer. (1995): How negative expectancies and attitudes undermine females mathematics
- [34] Johnston-Wielder, S. & Lee, C. (2008): *Does articulation matter when learning mathematics?* In Johnstone-Wielder, S Lee, C. (2008). Does articulation matterwhen learning mathematics? In Joubert M .(Ed.) Proceedings of the British society for Research into learning mathematics 28 (3) November 2008.
- [35] Johnson, B. & Christensen, L. (2004): *Educational research: Quantitative, qualitative, and mixed approaches*. Boston: Pearson Education, Inc.
- [36] Kothari, C.R.,(1984) : *Quantitative Techniques*, 2nd ed., New Delhi: Vikas Publishing HousePvt. Ltd.
- [37] Kenya Vision (2030).Koech Educational report-Kenya (1999) Edition
- [38] Korir Daniel K. *, Felix Kipkemboi (2014): *The Impact of School Environment and PeerInfluences on Students' Academic Performance in Vihiga County, Kenya*
- [39] Londonderry School District (2012): Focus Monitoring Summary Report
- [40] Lodico, M., Spaulding, D., & Voegtle, K. (2006): *Methods in educational research: From theory to practice*. San Francisco: Jossey-Bass.
- [41] Luckner John L., Ann M.Se bald, John Cooney, John Young Iii, Andsheryl Goodwin Lauglo & MacLean (2005): *Vocationalization of secondary school education*. The World
- [42] Bank, Africa Region. Human development Department, Netherlands Muir (2006): "An Examination Of The Evidence-Based Literacy Research In Deaf Education
- [43] Miheso, K.M (2002): *factors affecting mathematics performance among secondary schoolstudents in Nairobi Province, Kenya*. Unpublished Thesis, KenyattaUniversity
- [44] MacMath Wallace and Chi's (2009): *problems based learning in mathematics: A toll for developing students' conceptual knowledge*. Toronto Ontario institutefor studies.

International Journal of Novel Research in Education and Learning

 Vol. 5, Issue 4, pp: (89-103), Month: July - August 2018, Available at: www.noveltyjournals.com

- [45] Mbugua Z.K, Kibet, K Muthaa, G.M Reche G Chuka, N (2012): *Factors Contributing ToStudents' Poor Performance in Mathematics at Kenya Certificate of SecondaryEducation* in
- [46] Muthomi Samuel, Rwaimba (2016). School based factors affecting learning of Kenyan sign language in primary schools for hearing impaired in Embu and Isiolo counties, Kenya. *Revista Brasileira de Educaçãodo Campo*, 2016, vol. 1, n. 2, pp. 584-605.
- [47] Marschark, M., Shaver, D. M., Nagle, K. M., & Newman, L. (2015). Predicting the academic achievement of deaf and hard-of-hearing students from individual, household,communication
- [48] Moyer, P. (2001): *Are we having fun yet? How teachers use manipulatives to teachMathematics*. *Educational Studies in Mathematics*, 47(2), 175-197.
- [49] Murray, T., & Arroyo, I. (2002): *Towards Measuring and Maintaining the Zone ofP roximal development*. London. Plenum Press.
- [50] Maxon, A. B and Bracket, D. (1992): *The hearing impaired child: infancy through high school years*. New York: Andover Medical Publisher.
- [51] Meridith, D.G (1996): *Educational research: An introduction*. New York: LongmanPublishers.
- [52] Moores, D.F. (2000): *Educating the Deaf. Psychology, principles and practices*. Boston: Houghton Mifflin
- [53] Mpofu & Chimhenga (2013): Challenges faced by Hearing Impairment students. Madihah Khalid Mohd Khairul Amilin Tengah University Brunei Darussalam Communication in mathematics: the role Of language and its consequences for English as second language students
- [54] Musasia, A. M.; Nakhanu, S. B. & Wekasa, W. D. (2012): *Investigation of Factors thatInfluence Syllabus Coverage in Secondary School Mathematics in Kenya*: *International Journal of Humanities and Social Sciences*. 2(15): 51 – 59
- [55] Mercer, N. &Littleton, K. (2007): *Dialogue and the development of children 's thinking: a socio cultural approach*. London: Routledge
- [56] Munda, S. W.; Tanui, E. K.; Kaberia, L. (2000): *Relationship between Selected educational Facilities and Students Academic Performance in Secondary Schools in Bungoma District Kenya: Kenya Journal of Education Planning, Economics and Management, Eldoview Graphics, Kakamega, Kenya*.
- [57] Mafa, O & Makuba, E (2013): *The involvement of parents in the education of their children in Zimbabwe Rural primary schools: The case of Matabeleland North province*: In10SR journal of Research and methods in Education, Vol.1, Issue 3.(F01333743 pdf)
- [58] Marshal , C & Rossman, G. B (2006): *Designing Qualitative Research* (4Th Ed.) Thousand
- [59] Mansour, M., &Martin, A.J. (2009). Home, parents and achievement motivation: A study of key home and parental factors that predictstudent's motivation and engagement. *The Australian Educational and Developmental Psychologist vol.26* (2) (pp111-126).
- [60] McDonnall, M. C., Cavanaugh, B. S., & Giesen, J. M. (2010). The relationship between parental involvement and mathematics achievement for students with visual impairments. *The Journal of Special Education*,45(4),204-215.doi:10.1177/0022466910365169
- [61] Marc Marschark, Debra M. Shaver, Katherine M. Nagle,& Lynn A. Newman (2015). Predicting the Academic Achievement of Deaf and Hard-of-Hearing Students From Individual, Household, Communication, and Educational Factors.*Exceptional Children Vol 81*, Issue 3, pp. 350 - 369
- [62] Murray, T., & Arroyo, I. (2002): *Towards Measuring and Maintaining the Zone of proximal development*. London. Plenum Press.

International Journal of Novel Research in Education and Learning

 Vol. 5, Issue 4, pp: (89-103), Month: July - August 2018, Available at: www.noveltyjournals.com

- [63] McDonnall, M.C., Brenda S. Cavanaugh, & J. Martin Giesen, (2016). *The Relationship between Parental Involvement and Mathematics Achievement for Youth with Visual Impairments*. <http://blind.msstate.edu/research/nrtc-publications/2011-2015/pdf/9.pdf>
- [64] Marschark, M., Debra M. Shaver, Katherine M. Nagle, and Lynn A. Newman (2015). Predicting the Academic Achievement of Deaf and Hard-of-Hearing Students From Individual, Household, Communication, and Educational Factors. *Except Child. 2015 Apr; 81(3): 350–369*. doi: 10.1177/0014402914563700
- [65] Muiruri Lucy Wambui (2015). *Determining Classroom Communication And Academic Performance Of Learners With Hearing Impairment; A Case Of Kambui School For The Deaf-Kiambu County-Kenya*. A Thesis Submitted In Partial Fulfilment For The Degree Of Master Of Education (Special Needs Education) In The School Of Education Of Kenyatta University.
- [66] Mbugua, Z.K., Komen Kibet., George Mungiria Muthaa & George Reche Nkonke (2012). Factors Contributing To Students' Poor Performance in Mathematics at Kenya Certificate of Secondary Education in Kenya: A Case of Baringo County, Kenya. *American International Journal of Contemporary Research Vol. 2 No. 6; 112-119*
- [67] Mwenda Jennifer Muiti (2010). *Hindrances to Effective Learning Of Pupils With Hearing Impairment In Meru North District-Kenya*. Masters of Education (Special Education) In the School Of Education of Kenyatta University
- [68] McDonnall, M. C., Cavanaugh, B. S., & Giesen, J. M. (2010). The relationship between parental involvement and mathematics achievement for students with visual impairments. *The Journal of Special Education, 45(4), 204-215*. doi:10.1177/0022466910365169
- [69] Marc Marschark, Debra M. Shaver, Katherine M. Nagle, & Lynn A. Newman (2015). Predicting the Academic Achievement of Deaf and Hard-of-Hearing Students From Individual, Household, Communication, and Educational Factors. *Exceptional Children Vol 81, Issue 3, pp. 350 - 369*
- [70] Mwenda Jennifer Muiti (2010). *Hindrances to Effective Learning Of Pupils With Hearing Impairment In Meru North District-Kenya*. Masters of Education (Special Education) In the School Of Education of Kenyatta University.
- [71] Mbugua, Z.K., Komen Kibet., George Mungiria Muthaa & George Reche Nkonke (2012). Factors Contributing To Students' Poor Performance in Mathematics at Kenya Certificate of Secondary Education in Kenya: A Case of Baringo County, Kenya. *American International Journal of Contemporary Research Vol. 2 No. 6; 112-119*.
- [72] Marschark, M., Shaver, D. M., Nagle, K. M., & Newman, L. (2015). Predicting the academic achievement of deaf and hard-of-hearing students from individual, household, communication, and educational factors. *Exceptional Children, 81(3) 350-369*
- [73] Mtuli Tellah Charles (2016). *Assessing The Challenges Of Teaching And Learning Of Hearing Impaired Students Enrolled In Regular Primary And Secondary Schools In Tanzania*. Masters of Education in Administration, Planning And Policy Studies, Open University Of Tanzania
- [74] Musonda, M.N. & Phiri, W. (2017). Emerging Factors Affecting Academic Performance Of Learners With Hearing Impairments At Grade Twelve Examination Level. *The International Journal of Multi-Disciplinary Research, Volume 6, 78-88*
- [75] Muguongo, Grace K. (2016). Influencing Performance In Mathematics In Kenya Certificate Of Primary Education Examination Of learners With Hearing Impairment In Meru County, Kenya. <http://ir-library.ku.ac.ke/handle/123456789/14596>
- [76] Muiruri Lucy Wambui (2015). *Determining Classroom Communication And Academic Performance Of Learners With Hearing Impairment; A Case Of Kambui School For The Deaf-Kiambu County-Kenya*. A Thesis Submitted In Partial Fulfilment For The Degree Of Master Of Education (Special Needs Education) In The School Of Education Of Kenyatta University.

International Journal of Novel Research in Education and Learning

 Vol. 5, Issue 4, pp: (89-103), Month: July - August 2018, Available at: www.noveltyjournals.com

- [77] Mansour, M., & Martin, A.J. (2009). Home, parents and achievement motivation: A study of key home and parental factors that predict student's motivation and engagement. *The Australian Educational and Developmental Psychologist* vol.26 (2) (pp111-126).
- [78] Rafiq H.M, Fatima T, Sohail M.M, Saleem, Khaan A.M (2013): Parental Involvement and Academic Achievement
- [79] Rahman, J. L (2001): *The effects of parent involvement on student success: A research paper in home economics education*. Winconsin University of Winconsin Stout: Peters, M ; seeds.
- [80] Rumba, N. (2014). *Institutional Factors Influencing Academic Performance Of Kenya Certificate Of Primary Education On Children With Hearing Impairment In Special Schools In Coast Region, Kenya*. Master of Arts in Project Planning And Management Of The University Of Nairobi.
- [81] Rumba, N. (2014). *Institutional Factors Influencing Academic Performance Of Kenya Certificate Of Primary Education On Children With Hearing Impairment In Special Schools In Coast Region, Kenya*. Master of Arts in Project Planning And Management Of The University Of Nairobi.
- [82] Slavin, R. E (1984): *research methods in Education: A particular guide*. New Jersey: Prentice Hall Inc.
- [83] Stone, A. (2000). The Metaphor of Scaffolding: Its Utility for the Field of Learning Disabilities. *Journal of Learning Disabilities, Vol 3*
- [84] Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes* (M.Cole, V. John-Steiner, S. Scribner, & E Souberman, Eds.) Cambridge, MA: Harvard University Press
- [85] Vukovic, R.K., Roberts, O.S., & Wright, G.L. (2013). *From parental involvement to children's mathematical performance: The role of mathematics anxiety*. New York University Press.
- [86] Vygotsky, L. (1997): *Educational Psychology*. Florida: St. Lucie Press
- [87] Van der Walt M, Maree K & Ellis S (2008): *A mathematics vocabulary questionnaire for use in the intermediate phase*. *South African Journal of Education*,
- [88] Vandercook, Fleetham, D. Sinclair, S & Tettlies, R (1998) Cath Jess Jules and Ames....A Story of friendship .IMPACT 12.18-19
- [89] Van den Heuvel-Panhuizen, M. (2001): *Realistic Mathematics Education in the Netherlands*. In J. Anghileri (Ed.), *Principles and practice in arithmetic teaching* (pp.49-63) Buckingham/Philadelphia: Open University Press.
- [90] Van -Erde, D Hajer, M & Prenger, J (2010): *promoting mathematics and language learning in interaction: Interaction in two multicultural mathematics classrooms*.
- [91] Vukovic, R.K., Roberts, O.S., & Wright, G.L. (2013). *From parental involvement to children's mathematical performance: The role of mathematics anxiety*. New York University Press
- [92] Vigotsky L.S (1978): *Mind in Society*, Cambridge, M.A . Harvard University Press
- [93] Wesley, J.J. (2009): "Building bridges in content analysis: Quantitative and Qualitative Traditions" Ottawa, Ontario. [Presentation]
- [94] Wood, D. J Wood .H.A Griffith, A & Haworth, C.I (1986) : *Teaching and talking with deaf children*, Chichester: Wiley.
- [95] Wanjiru. N.W. (2016). *Parental Involvement And Its Influence In Learning Process: A Case Study Of Kambui Primary School for The Deaf, Kiambu County, Kenya*. Published MED Thesis, The Catholic University of Eastern Africa.
- [96] Wasike, D.W (2003): *Effects of socialized mathematics language module on students understanding of mathematics and their perception of the learning environment: A case of Form Two students of Bungoma District*.
- [97] Wekesa W.D (2006): effectiveness of a language based program in school mathematics on students

International Journal of Novel Research in Education and Learning

Vol. 5, Issue 4, pp: (89-103), Month: July - August 2018, Available at: www.noveltyjournals.com

- [98] Wanjiru. N.W. (2016). *Parental Involvement And Its Influence In Learning Process:A Case Study Of Kambui Primary School for The Deaf, Kiambu County,Kenya*. Published MED Thesis, The Catholic University of Eastern Africa.
- [99] Zellman, G. L., & Waterman, J. M. (1998): *Understanding the impact of parental involvement on children's educational outcome* Journal of Educational Research. 91(6), 370-380.
- [100] Zhang Hsien-Yuan, Dalun., HsuOi-man KwokMichael.,& BenzLisa Bowman-Perrott (2011). The Impact of Basic-Level Parent Engagements on Student Achievement: Patterns Associated with Race/Ethnicity and Socioeconomic Status (SES).*Journal of Disability Policy Studies Vol 22, Issue 1, pp. 28 - 39*
- [101] Zhang Hsien-Yuan, Dalun., HsuOi-man KwokMichael.,& BenzLisa Bowman-Perrott (2011). The Impact of Basic-Level Parent Engagements on Student Achievement: Patterns Associated with Race/Ethnicity and Socioeconomic Status (SES).*Journal of Disability Policy Studies Vol 22, Issue 1, pp. 28 - 39*