

Influence of Education Level of Parents on their involvement in Pre-Primary Children's Science Skills Acquisition in Kitui County, Kenya

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Abstract:- The aim of this study therefore was to determine whether the education level of parents influences involvement in their pre-primary children's science skills acquisition in pre-primary schools in Mumoni Sub County, Kitui County Kenya. The study was based on Epstein's Theory of Parental participation. The study adopted a descriptive survey research design and the target population was 1457 subjects comprising of 149 early childhood teachers and 1308 parents of pre-primary school children. Simple random sampling was employed to select 45 teachers and 132 parents of the pre-primary children who were included in the study. The instruments for data collection included questionnaires for teachers and parents. Prior to data collection, the researcher conducted a pilot study in two schools in Mumoni Sub County that were not included in the final study. The quantitative data were coded and entered in the computer for analysis using Statistical Package for Social Sciences (SPSS) Version 21 for windows. Descriptive statistics such as frequencies, means and percentages were employed to analyze quantitative data obtained from the field. The study established that parents with no formal education inadequately engaged their children in science learning at home and inadequately supported their children's science learning. This study therefore, recommends raising the level of parent's education through capacity building, through adult literacy programmes, community empowerment programmes aimed at improving family incomes and diversifying and strengthen family guidance and counseling programs to mitigate divorce among other family disintegration triggers.

Keywords: Level of Education, Involvement, Acquisition, Science Skills

I. INTRODUCTION

Globally, Science skills form the basis of growth and development in the contemporary industrial world and hence its early acquisition at school level and adoption require much attention. Children at pre-primary level acquire science skills from science activities in which they engage which is likely predetermined by the manner children are prepared in school and at home (Copple & Brekekamp, 2009). Early childhood classrooms that include science activities provide children with opportunities to gain ideas that are important for future learning (Worth & Grollman, 2009). As children carry out science activities in preschool classrooms they develop intellectual capacity and language as such activities would

provide children with opportunities to describe and explain scientific processes to others.

It has been noted that children who get support in science studies from parents at home are more likely to adopt the culture of science skills and later become professionals in technology and science with respect to creativity and innovation (Brenneman, Stevenson-Boyd & Frede, 2009). For instance in Norway, parents' involvement in their children's homework had significance effect on children's academic achievement in science skills (Mark, Creswell & Ainley, 2006). In Arabic Speaking Countries like Sultanate of Oman, Al-Shikili (2013) found that children had low acquisition of science skills due to poor or lack of knowledge in science skills among parents. In Nigeria, Olatoye and Agbatogun (2009) arguably report a relationship between home environment and acquisition of science skill among children in pre-primary schools in Nigeria. This relationship is attributed to numerous variables. In Rwanda, some parents were willing to participate in educating their children except that they were not able due to low level of education among the parents (Ndarihoranye & Ndayambaje, 2012). Thus, equipping pre-primary school children with the science process skills it requires family members to be familiar with the skills, and the methods of helping children acquire them.

In Kenya, Khatete (2010) established that teaching approaches used in primary schools in Kenya are ineffective and facilitates rote learning of science. Njagi (2016) showed that parents who engage their children in science activities facilitate them to acquire science skills that make them perform better in science subjects. This implies that it is vital for children to acquire science skills early to enable perform better in science learning. In Mumoni Sub-County, Kenya parents' involvement in their children's learning and particularly in facilitating acquisition of science process skills was found to be inadequate (Mutisya, Rotich & Rotich, 2013). This might possibly be attributed by parental characteristic of parents' level of education even though it was not ascertained in the study by Mutisya et al. (2013). Parental education may influence the willingness or ability for parents to become involved in their children learning. It may also hinder their participation by not engaging their children in science

activities at home. Such parents are not conscious of cognitive and health requirements of their children and they are at risk of falling behind in creativity based on social and emotional development. This by implication means that parent’s level of education and context influences a child’s reaction to life situations and probably the level of science skill acquisition. Therefore, the study sought to determine whether the education level of parents influences involvement in their pre-primary children’s science skills acquisition in Mumoni Sub County, Kitui County Kenya.

1.1 Purpose of the Study

The purpose of this study was to determine whether the education level of parents influences involvement in their pre-primary children’s science skills acquisition in Mumoni Sub County, Kitui County Kenya.

1.2 Conceptual Framework

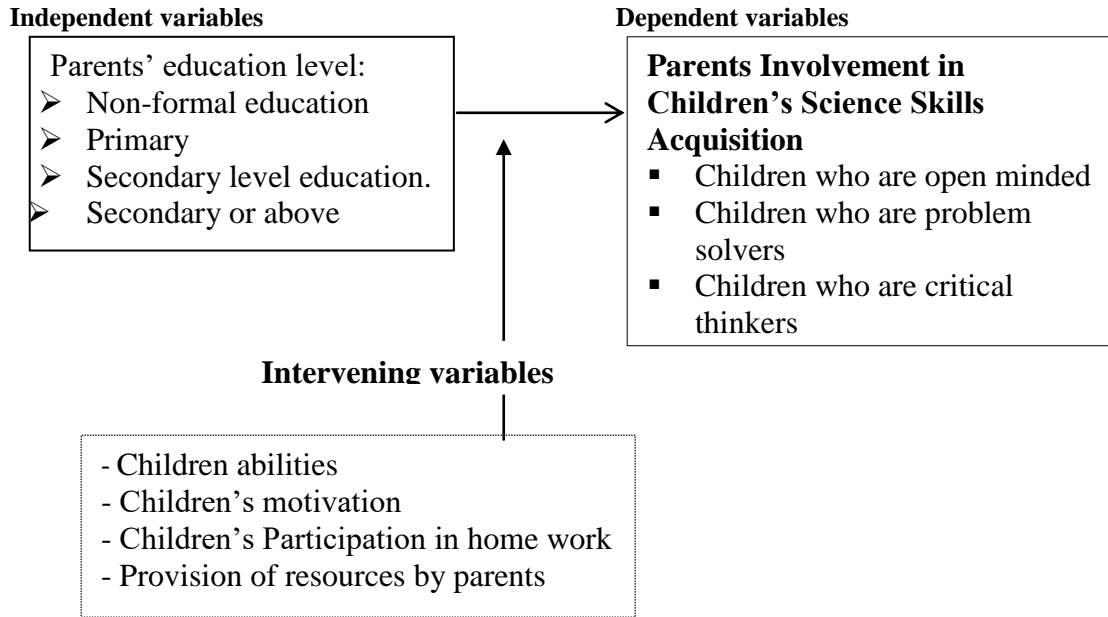


Figure 1.1: Conceptual Framework

II. LITERATURE REVIEW

2.1 Education Level of Parents

Educational level of parents is greatly connected to the educational attainment of their children. Studies in many parts of the world have also established the many benefits of parental participation in science process skills. In Norway, parental involvement in science process skills was found to significantly influence pre-primary school teaching (Daniel, 2011). According to Muola (2010), those children whose parents have a tertiary level of education acquire science skills easily than their counterparts whose parents have basic schooling only. This is because parents with higher education level may be or have the willingness or ability to involve themselves with facilitating acquisition of science skills to their children through provision of tutoring, encouraging science activities at home and ability to explain science concepts and stimulate science learning better than parents who have lower levels of formal education.

Mbewe, Chabalengula and Mumba (2010) argue that parents with a higher level of education tend to provide early science

training which is necessary in the development of motivation in science learning. This enhances development of children’s self-reliance and autonomy in decision making situations, problem solving and critical thinking, which are vital skills for living in the ever changing scientific world. Miles (2010) argues that parents with low level of education could have a negative effect on the science skill acquisition of their children. Children whose parents are less educated have been seen to lack home encouragement in science learning (Chevalier, Harmon, Sullivan & Walker, 2013). This implies that such parents may be less familiar and not interested in science process skills, thus may be unable to provide their children with needed science textbook and other parental characteristics in science learning activities. This may have a negative influence on their children’s acquisition of science skills. In Nigeria, Ogbemudia and Aiasa (2013) state that science teaching activities at home aid children to learn and acquire science process skills after normal school teaching. Children from families whose parents are less educated lack assistance in doing science assignments because of parents’ ignorance in the subject. Such parents fail to motivate, reinforce, give reward or encourage their children to focus on

science learning, thus inhibiting their science curiosity affecting their acquisition of science skills negatively.

In Kenya, Kemunto (2012) argue that parent's level of education has an influence on children's level of cognitive learning especially in science. It is possible that low parental education levels could affect negative family interaction patterns which can influence child behavior problems and in turn affect lower academic and achievement oriented attitudes over time. This study established the influence that parents' education level has on their involvement in pre-primary children's science skills acquisition specifically in Mumoni Sub County of Kitui County, Kenya.

III. METHODOLOGY

3.1 Research Design and Target Population

The study adopted a descriptive survey research design where data collection is done through administration of questionnaires. The target population in this study was 1457 subjects comprising of 149 pre-school teachers, 1308 parents of pre-primary children. The study employed the use of stratified sampling technique to select the 1325 children and their parents. From the selected 11 schools, stratified simple random sampling was employed to select 45 teachers proportionally from each zone.

3.2 Research Instrument

Structured questionnaires were used to collect data from teachers and parents. The questionnaire for teachers' consisted of three sections. Section A focused on parents' education level and how it influences their involvement in children's science skills acquisition. Section B had items seeking to establish how family income influences parents' involvement in children's science skills acquisition, while section C established how parents' marital status influences their involvement with their children's science skills acquisition. The questionnaire for parents was structured into two sections. Section A collected demographic data. Section B had questions to help the researcher determine the extent of parent's or guardian's involvement in their children's science skills acquisition.

3.3 Pilot Study

The research tools were piloted in two schools in Mumoni Sub County which was not included in the final study. Teachers and parents of three to six year olds in the two schools were included in the pilot study. The purpose was to test the appropriateness of the items in the instruments with the objective of improving them in order to enhance validity and reliability. The instruments were made available for scrutiny by the supervisor assigned to the researcher who is expert in research in the study area and provided feedback to help in validating the questionnaires.

3.4 Data Collection Procedure

The study focused on the use of primary data which was collected by administering questionnaire to the sample population. The researcher personally administered the questionnaires to the teachers. For parents, the researcher identified the sampled parents with the help of the teachers. For teachers, each respondent included in the sample was given a questionnaire to fill and was requested to be confidential, truthful and genuine with the responses. The questionnaires were later collected by the researcher within a week. This ensured the respondents had adequate time to respond to the questions appropriately at their convenience.

Selected parents were requested to come to school to fill-in the questionnaire on a predetermined day. Literate parents were requested to fill-in the questionnaire keenly and truthfully on their own. For the illiterate parents, the researcher translated the questions and filled-in the questionnaire on behalf of the parents to make the process more accurate and efficient. The researcher had developed items/questions that required the respondent to provide answers about themselves to avoid generating unbiased information. Furthermore, the researcher had developed close-ended questions in which the respondent is asked to select an answer from among a list provided by the researcher.

3.5 Data Processing and Analysis

Data obtained from the field was cleaned by checking for any missing or inaccurate data and correcting it appropriately. The quantitative data obtained from the questionnaires was coded and entered in the computer for analysis using Statistical Package for Social Sciences (SPSS) Version 21 for windows. Descriptive statistics such as frequencies and percentages were utilized while the influences of parental characteristics were evaluated by using frequencies and means. On the other hand, qualitative field data were analysed by grouping the kind of similar responses given according to specific themes generated from the objectives of the study and presenting them in written form.

IV. RESULTS

This section presents the data collected from the field and its analysis based on the achievement of the study objective. Table 1 presents the results on the level of depression analyzed against gender and intensity of visual impairment among learners who took part in the study. A number of aspects of parents' involvement were measured on a 5-point Likert scale and the responses related to the level of parental engagement in children science skills acquisition obtained are captured in Table 1.

Table 1: Parents Education Level and Involvement in Their Pre-Primary Children’s Science Skills Acquisition

Parent Responses	Education level	Response n=131 N(%)			Mean
		A	N	D	
I engage my child in reading science materials to enable him/her discover facts	NFE (n=15)	0	4(25)	11(75)	3.0
	P (n=31)	15(51)	8(25)	8(25)	5.9
	S (n=46)	34(75)	12(25)	0	7.4
	AS (n=39)	31(80)	4(10)	4(10)	9.6
I ask my child science related questions	NFE (n=15)	0	7(50)	8(50)	3.0
	P (n=31)	8(25)	11(38)	12(38)	4.5
	S (n=46)	34(75)	12(25)	0	8.2
	AS (n=39)	39(100)	0	0	9.0
I help my child with science experiments like burning of a candle at home	NFE (n=15)	0	4(25)	11(75)	14.2
	P (n=31)	12(37.5)	12(37.5)	7(25)	5.3
	S (n=46)	46(100)	0	0	9.0
	AS (n=39)	39(100)	0	0	9.0
I engage my child in science activities that help him/her guess outcome	NFE (n=15)	4(25)	4(25)	7(50)	4.6
	P (n=31)	7(25)	12(37.5)	12(37.5)	4.5
	S (n=46)	46(100)	0	0	9.0
	AS (n=39)	39(100)	0	0	9.0
I am involved in helping my child make correct observation about science at home	NFE (n=15)	4(25)	4(25)	7(50)	4.6
	P (n=31)	8(25)	16(50)	7(50)	4.5
	S (n=46)	46(100)	0	0	9.0
	AS (n=39)	39(100)	0	0	9.0
I talk to my pre-school child’s teacher about his/her performance in science activities	NFE (n=15)	0	7(50)	8(50)	3.0
	P (n=31)	4(12.5)	12(37.5)	15(50)	3.8
	S (n=46)	43(92)	3(8)	0	8.6
	AS (n=39)	39(100)	0	0	9.0
I help my pre-school child with his/her science activities homework	NFE (n=15)	7(50)	8(50)	0	5.8
	P (n=31)	8(25)	16(50)	7(25)	4.5
	S (n=46)	42(92)	4(8)	0	8.5
	AS (n=39)	39(100)	0	0	9.0
I go through my child’s science activities books in the evening to see what he/she learnt	NFE (n=15)	0	4(25)	11(75)	3.0
	P (n=31)	4(12.5)	16(50)	10(37.5)	3.7
	S (n=46)	46(100)	0	0	9.0
	AS (n=39)	39(100)	0	0	9.0
I encourage my child to read his/her science activity book while he/she is at home	NFE (n=15)	4(25)	3(25)	8(50)	4.6
	P (n=31)	8(25)	12(37.5)	11(37.5)	4.5
	S (n=46)	34(75)	8(17)	4(8)	7.4
	AS (n=39)	39(100)	0	0	9.0
I encourage my child to engage in science activities such modeling, building blocks, dissolving sugar in liquids etc	NFE (n=15)	8(50)	4(25)	6(50)	6.8
	P (n=31)	4(12.5)	12(37.5)	15(50)	3.8
	S (n=46)	46(100)	0	0	9.0
	AS (n=39)	39(100)	0	0	9.0

I keep science educational books at home which my pre-school child can look at	NFE (n=15)	4(25)	3(25)	8(50)	4.6
	P (n=31)	8(25)	12(37.5)	11(37.5)	4.5
	S(n=46)	39(84)	3(8)	4(8)	8.1
	AS (n=39)	39(100)	0	0	9.0
I can afford to buy my child all the materials he/she needs to learn science activities	NFE (n=15)	0	8(50)	7(50)	3.0
	P (n=31)	8(25)	12(37.5)	11(37.5)	4.5
	S (n=46)	46(100)	0	0	9.0
	AS (n=39)	39(100)	0	0	9.0
I can afford to take my pre-school child to science trips	NFE (n=15)	0	8(50)	7(50)	3.0
	P(n=31)	4(12.5)	8(25)	19(62.5)	3.8
	S (n=46)	42(92)	4(8)	0	8.5
	AS (n=39)	39(100)	0	0	9.0

Key: NFE-No Formal Education; P-Primary; S-Secondary; AS-Above Secondary

Table 1 above shows that parents with no formal education were not asking their children science related questions while at home as reflected by a mean of 3.0 which corresponds to a disagree inference on the Likert scale. However, those with formal schooling were found to ask their children science related questions. From the results of this survey it can be construed that parents with no formal education may not be helping their children with science experiments like burning of a candle at home as reflected by the mean of 3.0, whereas those with formal schooling does. The study shows that all categories of parents (with or without formal education) engage their children in science activities that help them guess outcome. This is from the 5-Point Likert scale of above the 3.0 for all the categories. The study also shows that parents with or without formal education talk to their pre-school children's teacher about their performance in science activities. This is depicted by the mean of 3.0 and above from the 5-Points Likert Scale.

The results of this study further indicate that parents with or without formal education engage their pre-school children in doing science homework at home as reflected by mean of 5.8 by the parents with no formal education, 4.5 by parents with primary education, 8.5 by parents with Secondary education and 8.5 by parents with higher education level. The results of this survey further shows that both parents with or without formal education encourage their children to read their science activity book while they are at home as depicted by the mean of above 3.7 from the 5-Points Likert Scale. The results of this study further show that parents with and without formal education were found to be encouraging their children to engage in science activities such modeling, building blocks, dissolving sugar in liquids etc. This is reflected by a mean above 3.8 on the 5-Points Likert Scale. All categories of parents' level of education both with and without formal education keep science educational books at home which their pre-school child can look at, reflected by a mean of above 4.5 on the 5-Points Likert Scale. Further, both parents with and without formal education can afford to buy their children all the materials he/she needs to learn science activities. The

findings are in line with that of Leavell, Tamis-LeMonda, Ruble, Zosuls and Cabrera (2012) who established that the level of parents' education has an influence on adolescents' skill acquisition in physical education. This could also be true with skill acquisition in science. Similar findings were obtained by Epstein, Sanders, Sheldon, Simon, Salinas, Jansornand Hutchins (2018) in their study of family, and community partnerships towards the learning of children in school. The results of this survey show that parents with no formal education were found not to go through their children's science activities books in the evening to see what they learnt. Those with formal education go through their children's science activities books in the evening to see what they learnt. The finding is also in congruent with the findings established by Chevalier, Harmon, O'Sullivan and Walker (2013) whose study on the impact of parental income and education on the schooling of their children established a positive relationship between parental formal education and their children's skill acquisition in science. .

V. CONCLUSION

The study concludes that parents with no formal education rarely engaged their children in science learning at home and inadequately supported their learning through provision of science materials asking children science related questions. They also scantily encouraged them in carrying out simple science experiments and science activities, perusing through children's science activities books in the evening to see what was learnt and paying for their children to attend science trips.

VI. RECOMMENDATIONS FOR PRACTICE

The findings showed that a number of parents did not take part in some home activities related to science because they did not know it was their responsibility to do so. The Ministry of Education through the County of Government need to implement and facilitate adult literacy programmes in order to enhance literacy and establish the capacity of parents in engaging in their pre-primary children's skills acquisition.

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