Research Paper Education

Impact of Television Viewing Habit on Development of Basic Arithmetic Skills Among Primary School Children in Nsukka Urban, Nigeria

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ABSTRACT

The study investigated the impact of intense, moderate and low television viewing habit (TVHa) on the development of basic arithmetic skills among primary school children in Nsukka urban, Enugu State, Nigeria. The design of the study was Ex Post Facto. The sample was 429 comprising187 intense, 128 moderate and 114 low Television viewing primary five pupils purposively drawn from six public and four government-approved privately owned primary schools in Nsukka urban. The instruments used for the study - personal television viewing profile (PTVP) and test of acquisition of basic arithmetic skills (TABAS) were developed by the researchers. The research question was answered using descriptive statistics while the hypothesis was tested at .05 probability level using analysis of variance (ANOVA) statistic. Scheffe test was also done to determine the direction of the significant mean differences. The findings of the study indicated that moderate television viewing habit engendered the development of basic arithmetic skills among primary school children. Intense TVHa was found to be detrimental to the development of basic arithmetic skills among children while low TVHa on the other hand did not promote the development of basic arithmetic skills among children. Comparatively, moderate TVHa was found to have significant positive impact while intense TVHa had significant negative impact on the development of basic arithmetic skills. Based on these findings, the researcher concluded that, encouraging children to develop moderate TVHa will enhance the development of basic arithmetic skills. Also that complete denial or low access to television viewing may limit children's world of experience thereby hampering their basic arithmetic skills development. The researchers therefore recommended that parents, caregivers and teachers help children to tap from the opportunities offered through regulated television programmes to access global experience needed for adequate development of basic arithmetic skills.

Keywords : Television viewing habit, basic arithmetic skills, basic cognitive skills, middle childhood stage

Introduction

Productive living in any society requires proper application of certain basic life skills which include cognitive, social, emotional skills, among others. Arithmetic skills are integral part of the general cognitive skills. In this study, basic arithmetic skills were conceived as number and numeration, basic arithmetic operations (addition, subtraction, division and multiplication) and basic geometry (two and three dimensional shapes). Development of basic cognitive skills generally and arithmetic skills in particular is systematic, gradual and progressive by nature. Development of arithmetic skills like human development generally is influenced by both hereditary and environmental factors. Contemporary psychologists such as Baummrid (1993), Jackson (1993) and Berndt (1997) tend to believe that nature and nurture interact intricately to determine human development.

Inherited factors set the limit within which the individual can achieve their potentials, but the inherited factors cannot function optimally unless the environmental forces are able to play their roles. Heredity potentials are given, therefore, the onus on parents and care providers is to harness nurture for the child to attain the highest level set by the child's innate endowments in developing the basic life skills. Children acquire much of these life skills during early and middle childhood. Middle childhood stage, the focus of this study, spans through six to eleven years. This stage is critical as it coincides with the period children start formal primary education.

Primary Education in Nigeria

In Nigeria, the legal age at which children start primary education is six years. The National Policy on Education (FRN, 2004, p. 14) defines primary education as the education given in institutions for children aged six to eleven years plus. The policy articulates the goals of primary education as to among others: inculcate permanent literacy and numeracy and ability to communicate effectively; lay a sound basis for scientific and reflective thinking; and give the child an opportunity for developing manipulative skills. In pursuance of the above goals, the Nigerian National Policy on Education (NPE) stipulated that teaching in primary schools shall be experiential and exploratory; that he medium of instruction shall be the language of the child's immediate environment for the first three years during which English language shall be taught as a subject and that learning environment shall be child friendly. The critical role the learning environment plays in child development made Montessori (1912) to advocate for rich, safe, interactive and healthy environment for the growing child.

2.1 Basic cognitive skills at the middle childhood stage

Children within the middle childhood stage of development are concrete operational by nature. That is, they learn more by manipulating concrete or physical objects (Piaget, 1964). In line with that, Ngwoke and Eze (2010) also identified some

key cognitive skills expected to be developed by an average child in the concrete operational stage of development as follows: conservation, causation, classification and manipulative symbols. Development of general cognitive skills and arithmetic skills in particular demands that the child has adequate opportunity and time interacting with people, events and objects within the child's environment. Therefore, what goes on within the child's physical and socio-psychological environment has tremendous impact on arithmetic skill development. Parents, teachers and other care providers have significant role to play in providing opportunities for the simultaneous interaction between the child and his environment. These they can offer by being available to play and interact with the child in the language of the child's immediate environment or his mother tongue. They can also help by providing rich, safe, healthy, educative and interactive environment for the growing child.

Background review

In Nsukka urban for instance, children especially primary school children may be disadvantaged in terms of complementary role that parents and the home generally play in providing opportunities for the simultaneous mutual interaction between the child and their environment. Many parents within Nsukka urban are civil servants who spend greater part of their day in the office. Children appear to be left on their own or at most at the mercy of day care providers. Many day care centers and privately owned primary schools within Nsukka urban dismiss around 4pm and parents appreciate the arrangement because it helps them to relegate responsibility of taking care of the children after school. Even in the case of public primary schools which dismiss by 1.30pm, children are still left to take care of themselves till evening time when parents would return from offices or from business centers.

The University of Nigeria situates in Nsukka urban. Therefore, there is a fairly adequate complement of municipal infrastructure such as regular supply of electricity within the university town. There is also the global effect of plethora of information and communication technology (ICT) gadgets. In view of the above, children within Nsukka urban may appear to be precocious over children in rural or even other urban areas in terms of access to and the use of ICT gadgets. Television viewing for example has become a pervasive and ubiquitous pass-time in the home in this area. Most families no matter the socio-economic status or academic background strive to procure a television set so long as electrical power can in one way or the other be made accessible. Television viewing is described as an act of spending time in front of a television screen while participating actively or passively in what is being displayed (Evra, 1998). According to Evra, television if used in moderation can stimulate a child's development and creativity. Specifically, it can stimulate the imagination, teach letters and numbers and enhance manipulative skills.

3.1 Impact of Television viewing on children

Despite the above merits of television viewing in the life of children, it may have some deleterious impact on the development of basic arithmetic skills. For instance, television viewing can teach letters and numbers quite alright, like counting along, but it is still not interactive, because the child's response whether right or wrong, complete or incomplete makes no difference to what follows on the screen. Worse still, it makes the viewer highly passive. In view of the above, the impact television viewing may have on development of basic arithmetic skills may therefore depend to a large extent on the viewing habit of the child.

3.2 Television viewing habit

Television Viewing habit (TVHa) is described by Jason and Johnson (1995) as the amount of time an individual spends viewing television programmes, the nature of the programmes viewed, the age of the viewer and the viewing time. In this study, TVHa is conceptualized as the average daily viewing time of primary school children. Healthy TVHa (for instance viewing television programmes for about 1-2 hours daily) may enhance the development of the basic arithmetic skills. However, a habit of not viewing at all or viewing for three hours or more daily especially viewing general audience programmes or cartoon shows may be detrimental to the development of basic arithmetic skills. According to Wiecha, Sobon, Peters and Goatmaker (2001) little access to television viewing at may limit the child's range of experience making them myopic in thinking and acting while excessive viewing habit may steal away time from the child's time schedule, like stealing the time children would spend completing their homework, in active interaction with family members and other significant adults or even with peers after school or getting enough sleep. Zimmerman and Christakis (2005) also observed that excessive television viewing may put a child in a kind of hypnotic trance. This can cause frontal lobe damage to children which may precipitate cognitive problems like attention deficit hyperactivity disorder among other disabilities.

In this study, TVHa was classified into three: intense viewers (3 or more hours of daily television viewing), moderate television viewers (1-2 hours of daily television viewing) and low viewers (less than 1 hour of daily television viewing). There is increasing concern by parents, teachers and researchers (Jason and Rooney-Roobeck, 1984), Thomas (1990) and Ebata (2005) about the amount of time that television viewing consumes and the nature of television programmes viewed and its possible impacts in the life of children. Therefore there is need for researchers to address the issue of the possible impact of TVHa on children's' development of basic cognitive skills generally and arithmetic skills in particular. This study therefore focused on determining the specific impact of TVHa on development of basic arithmetic skills.

4. Statement of the Problem

Childhood is a delicate and significant stage in human development. It is a period when children lay solid foundation for the development of basic life skills. At this stage, children are characteristically active, energetic, playful and inquisitive. They need to be provided with safe and healthy environment full of people, events and objects to explore and manipulate. Unfortunately, in contemporary Nigerian society, the complementary role of family in helping children develop basic cognitive skills may no longer be guaranteed. Television and other communication technological gadgets appear to be rapidly replacing the critical role of family in this regard. The issue is not that television viewing is completely bad for the growing child but that parents and other significant adults appear too busy and are rarely available to either sensor what children view on the screen or moderate their viewing habit. When children are left to take care of themselves for a long time, they tend to view whatever appeals to them and for as long as they want. The impact unfettered access to television viewing may have on the development of basic cognitive skills by children in Nigeria is not quite clear. The problem of this study therefore is: what would the impact be of TVHa on primary school children's development of basic arithmetic skills?

Research Question

One research question guided the study. What is the mean score of intense, moderate and low television viewing primary school children on a test of acquisition of basic arithmetic skill (TABAS)?

Hypothesis

One null hypothesis was tested at 0.05 probability level: There is no significant difference in the mean scores of intense, moderate and low television viewing primary school children on TABAS.

5. Methodology

The study employed an *Ex-Post-Factor* research design. The population of the study comprised 2492 primary five school children in Nsukka urban, Enugu State, Nigeria. Ten schools (six public and four government approved privately owned primary schools) were randomly selected from the study area. Children in primary five fall within the middle childhood stage

which is the focus of this study. The researchers assumed that pupils within this developmental bracket could give valid information pertaining to their television viewing habit to enable the researchers to categorize them into three groups of television viewing habit (TVHa)- intense, moderate and low.

The preliminary instrument for the study was a personal television viewing profile (PTVP) constructed by the researcher. The PTVP was used to identify the intense, moderate and low television viewing children in the selected schools. A copy of the PTVP was administered to each of the primary five (5) pupils in the selected schools. The same PTVP was also given to the parents of the pupils. The average of the two profiles (the profile completed by the pupil and that completed by the parent) was taken to represent the average daily viewing hour(s) for the child. Children whose parents did not return validly completed dairy were excluded from the study. A total of 639 copies of PTVP were distributed to the pupils and also to their parents. Only 429 copies of PTVP were validly completed and returned by the parents. The 429 pupils whose parents properly completed and returned the diary formed the sample of the study. Analysis of the PTVP yielded: 187 intense, 128 moderate and 114 low television viewing children. Intense viewers were those who had average daily viewing time of three hours and above, moderate viewers had average daily viewing time of one to two hours while the low viewers had average daily television viewing time of less than one hour.

The main instrument for the study was a Test of Acquisition of Basic Arithmetic Skills (TABAS). This was constructed by the researchers using senior primary arithmetic curriculum and primary 4 arithmetic textbook, as approved by the Nigerian Federal Ministry of Education (FME, 2007). Primary 4 textbook and curriculum were used because at the time of this study, the primary 5 pupils were still in the first half of the session, and the content of primary 5 textbook may be above their developmental level. The TABAS was made up of 20-item multiple choice test which was dichotomously scored. Each question carried 5 marks giving a maximum score of 100 for the test.

The PTVP and TABAS were face validated by one childhood educator and two educational psychologists from the University of Nigeria Nsukka, and two primary school teachers in Nsukka urban, all in Nigeria. The internal consistency reliability of the TABAS estimated using K-R 21 formula was .89. The individual class teachers helped in the administration and collection of the PTVP and TABAS from the respondents. The research question was answered using descriptive statistics while the hypothesis was tested at 0.05 probability level using analysis of variance statistic.

6. Results

Table 1: The Mean Score and Standard Deviation of Intense, Moderate and Low Television Viewers in TABAS

TV habit	N	$\overline{X}$	SD
Intense viewers	187	41.8503	21.57555
Moderate viewers	128	69.7734	16.13926
Low viewers	114	54.7368	18.27037
Total	429	53.6061	22.50807

Data in Table 1 show that the intense television viewers had a mean score of 41.85 and standard deviation of 21.58 on the TABAS. Moderate television viewers had a mean score of 69.77 and standard deviation of 16.14 while low television viewers had a mean score of 54.74 and standard deviation of 18.27.

The data suggest that moderate television viewers had the highest mean score while low television viewers had higher mean score when compared to the intense television viewing group. The data therefore suggest that there were differences in the performance of the three categories of television viewers on the test of acquisition of basic arithmetic skills. The standard deviation ranged between 16.14 and 21.58. The variability among the scores is low.

Hypothesis

Table 2: Summary of One-way Analysis of Variance (ANOVA) on the Impact of TVHa on TABAS

	Sum of Squares	Df	Mean Squares	F	Sig.
Between Groups	59446.082	2	29723.041	80.453	.000
Within Groups	157384	426	369.447		
Total	216830.082	428			

Data in Table 2 reveal that TVHa had significant impact on development of basic arithmetic skills. This is shown by the calculated F value of 80.45 which was significant at probability level of .00. Therefore, the null hypothesis of no significant impact of TVHa on the development of basic arithmetic skills was rejected.

Table 3: Results of Scheffe Post hoc Test of Mean Scores of the Intense, Moderate and Low Television Viewers on TABAS

television viewing habit	elevision viewing habit	Mean difference	Std. error	Sig
Intense viewing	Moderate viewing	-27.92317*	2.20498	.000
	Low viewing	-12.88657*	2.28395	.000
Moderate viewing	Intense viewing	27.92317*	2.20498	.000
	Low viewing	15.03660*	2.47529	.000
Low viewing	intense viewing	12.88657*	2.28395	.000
	Moderate viewing	-15.03660*	2.47529	.000

***the mean difference is significant at the .00 level**.

Data in Table 3 reveal that there was a significant difference in the mean scores of the intense television viewing group relative to the moderate television viewing group with a mean difference of -27.92 and the low television viewing group with a mean difference of -12.89. The mean differences were significant at .05 level in favour of the moderate television viewing group. The observed significant mean differences among the three groups of television viewers favoured the groups in the following increasing order: intense television viewers < low television viewers < moderate television viewers (41.85 < [54.74< 69.77).

6.1 Discussion

The findings in this study have shown that television viewing habit (TVHa) had significant impact on pupils' development of basic arithmetic skills. Moderate television viewers significantly differed from both intense and low television viewers in the test of acquisition of basic arithmetic skills (TABAS). This finding tends to agree with the finding of Evra (1998) that television if used in moderation could enhance cognitive skills development. Specifically, Evra noted that regulated and age appropriately censored television programmes could stimulate the imagination, teach letters and numbers and enhance pre-reading and voluntary reading skills which are all crucial for proper arithmetic skills development.

The respondents in this study fall within Piaget's concrete operational stage (Piaget, 1964). In their book, Ngwoke and Eze (2010) had identified some key cognitive skills expected to be developed by an average child in the concrete operational stage of development as conservation, causation, classification and manipulative symbols. Development of these basic cognitive skills demands that the child has adequate opportunity and time interacting with people and objects within the child's environment. The apparent poor performance of the intense television viewers on TABAS in this study may therefore be attributed to lack of quality time for active interaction of the child with people and objects within their immediate environment. This finding agrees with the finding of Wiecha et al (2001), that time spent viewing uncensored television programmes displaces more educative activities such as

home work, voluntary reading, creative plays, or even getting enough sleep which are very crucial for sound arithmetic skills development and academic achievement. The findings of this study also support the finding of Thomas (1990) that as the amount of time spent by a child viewing television programmes goes up, the amount of time devoted to home work, study, and physical activities decreases accordingly.

There appears to be therefore, an inverse influence of the time children spend viewing television and cognitive skills development to an extent. The *post- hoc* multiple comparison analysis of the mean scores of the pupils in this study in the Test of Acquisition of basic Arithmetic Skills (TABAS) lends support to this interpretation. The multiple comparison analysis showed that moderate television viewing habit facilitated the development of basic arithmetic skills more than both low and intense television viewing habit. Indeed, intense viewing habit appeared to be very deleterious to development of basic arithmetic skills. It means therefore, that although television viewing may be a very effective communication medium that has great potential to introduce children to a much wider range of experiences and ideas than would otherwise not be possible (Murray, 2003), children should not be left glued to the screen of the television all through their waking time. While children may not be blocked from the television screen, their access to television viewing should not be unfettered. Censored television viewing might more engender the development of arithmetic skills than unfettered or low viewing habits.

6.2 Conclusion

Exposing children to unfettered or low access to television programmes may inhibit development of basic arithmetic skills. Parents and other care providers need to moderate television viewing time of children to create a balance between television viewing and quality time for children to interact with significant adults, do home chores, complete home work and engage in other activities that may engender development of basic arithmetic skills.

It is recommended here that parents, caregivers and teachers harness scarce financial resources to provide television resources and gadgets for primary school children so as to widen their range of experience. They should also avail themselves during prime time to provide quality supervision of and participation in children's television viewing activity. Furthermore, they should encourage children to judiciously distribute their time out of school across television viewing and other wide range of activities that may engender basic arithmetic skills development

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