

**A CAUSAL MODEL OF FAMILY SOCIO-DEMOGRAPHIC FACTORS ON  
PARENTS' INVOLVEMENT IN THE PROVISION OF BASIC EDUCATION  
AND STUDENTS' ACHIEVEMENT IN ENGLISH LANGUAGE**

BY

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## ABSTRACT

Provision of basic education is currently receiving a global attention and a boost in all nations of the world. Research evidence in Nigeria indicates a nation-wide concern over the consistent students' poor performance in English language particularly in externally conducted examinations. The failure rate in the subject is on the increase in spite of concerted effort to find pedagogical solution within the school system. There is a need for serious government, school and parent collaboration in the provision of basic education to improve students' achievement. This study, therefore, sought to establish a causal explanation of family socio-demographic factors that influence parental involvement and students' achievement in English language in Ogun state.

The study is an ex-post-facto type which used a multi-stage sampling procedure to select 1,373 students from thirty schools spread across six local government areas in Ogun state. Two instruments were used to collect data. They were Students Achievement Test in English ( $KR_{20}=0.71$ ) and Questionnaire on Parents' Involvement ( $\alpha =0.96$ ). Four research questions were answered in the study. The data obtained were subjected to path analysis.

The most meaningful causal model on parents' involvement had twenty four pathways that were significant at  $p < 0.05$ . All the predictor variables (marital status, parents' education, parents' occupation, parents' income, number of children, family size, gender of the child, parental educational expectation) made a total contribution of 7.2% of the variance in parents' involvement. In all, the total effect on parents' involvement was more indirect (51.78%) than direct (48.22%). Parents' education ( $\beta = .20$ ) had the most potent effect on parents' involvement; followed by parents' occupation ( $\beta = .06$ ), marital status ( $\beta = -.07$ ) and family size ( $\beta = -.24$ ). Parents' income, number of children in the family, gender and parents' expectation had only indirect effect on parents' involvement. Also, the most meaningful causal model on students' achievement had twenty five pathways that were significant at  $p < 0.05$ . All the predictor variables made a total contribution of 5.2% of the variance in achievement in English language. In all, the total effect on achievement was more indirect (50.13%) than direct (49.87%). Number of children ( $\beta = .23$ ) had the most potent effect on achievement in English language, followed by parents' educational expectation ( $\beta = .16$ ), parents' education ( $\beta = .09$ ), parents' income ( $\beta = .05$ ) and family size ( $\beta = -.24$ ).

Marital structure, parents' occupation, gender and involvement had only indirect effect on achievement in English language.

Parents' education, family size, parents' occupation, and marital status directly influenced parents' involvement; and number of children, parents' educational expectation, parents' education, parents' income and family size directly influenced achievement. Educational administrators, principals, teachers, students and parents should see these variables as very important in improving parental involvement and achievement in English language at the junior secondary school level. Parents' involvement should be seen as a continuous process to enhance students' achievement in school.

**Key words:** Parental involvement, Family socio-demographic factors, Achievement in English language, Basic education.

**Words count:** 461

## **DEDICATION**

To God who was, is and ever shall be. To Him be all the glory for who He is and ever shall be to and in me for His love and mercy that endures forever.

To my loving husband, Jonathan. O. Aderibigbe.

To my beloved children, Dorcas, Deborah and Daniel.

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## **CERTIFICATION**

I certify that this work was carried out by Olufunmike Margaret Aderibigbe in the International Centre for Educational Evaluation, Institute of Education, University of Ibadan, Ibadan.

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## LIST OF ACRONYMS

EFA	Education For All
EITC	Earned Income Tax Credit
ESEA	Elementary and Secondary Education Act
FGN	Federal Government of Nigeria
FRN	Federal Republic of Nigeria
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immune deficiency Syndrome
ICT	Information and Communication Technology
LGEA	Local Government Education Authority
MDGs	Millennium Development Goals
NCES	National Centre for Educational Statistics
NLSCY	National Longitudinal Survey of Children and Youth
NLSY	National Longitudinal Survey of Youth
NSFH	National Survey of Families and Households
OAU	Organisation of African Unity
OLS Regression	Ordinary Least Squares Regression
PSID	Panel Study of Income Dynamics
PTA	Parent Teacher Association
PTO	Parent -Teacher Organisation
SES	Socioeconomic Structure
SUBEBS	State Universal Basic Education Boards
TIPS	Teachers Involve Parents in Schoolwork
UBE	Universal Basic Education
UBEC	Universal Basic Education Commission
UBEP	Universal Basic Education Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UPE	Universal Primary Education
WCEFA	World Conference on Education For All





# CHAPTER ONE

## INTRODUCTION

### 1.1 Background to the Problem

The quest for education is increasingly becoming indispensable in the life of every human being. Education leads to the development of the whole person and also to the socio-economic development of a nation as a whole. This is probably the reason the government is interested in the provision of free basic education to Nigerian children at the primary and junior secondary levels of education. The Federal Government of Nigeria introduced the Universal Basic Education (UBE) in September 1999, in an attempt to enhance what the Federal Republic of Nigeria (2004) described as access to education, especially among children, irrespective of their socio-economic and geographical background and in a bid to meet the need for lifelong basic education. The introduction of the UBE represents a milestone in the enhancement of an individual's right to formal education, especially among the disadvantaged groups who are identified as the children of nomadic pastoralists, migrant fisher folks, migrant farmers and hunters, who due to their lifestyle are unable to have access to the conventional educational provision (Federal Republic of Nigeria, 2004).

According to Obanya (2002), basic education is not simply a package but more of a process, whose major goal, is laying a solid foundation for life-long learning. Also, it is not simply schooling (or formal education) but an expanded view of education that seeks to fully integrate all its forms: informal, non-formal and formal. According to him, education should not be built on a shaky foundation. He further advises on the need to focus on basic education from the point of view that it broadens the scope of participation and makes the returns to investment at this level of education to impact meaningfully on societal development, as well as form a solid foundation on which higher education can be built. This, according to him, makes basic education a good pipeline to quality and relevant higher education. Focusing on basic education, therefore, implies ensuring more adequate preparation for higher education, releasing more talents for entry into the latter and preparing these talents more adequately for higher education.

There are three components of the UBE scheme as currently implemented. These are formal basic education encompassing the first nine years of schooling

(primary and junior secondary education) for all children, nomadic education for school age children of pastoral nomads and migrant fishermen, and literacy and non-formal education for out-of-school children, youths and adults. In addition, the Universal Basic Education Act in Nigeria, according to UBEC (2004) makes these major provisions:

- (i) 9-year basic education which is universal, free and compulsory in public primary and junior secondary schools;
- (ii) recognises and preserves the exclusive constitutional responsibility of States and Local Governments in Nigeria to provide basic education;
- (iii) implements UBE through SUBEBs and LGEAs at the state and Local Government levels, respectively;
- (iv) the Federal Government's role is an intervention to ensure uniform, equitable and qualitative provision of basic education throughout the country;
- (v) prescribes punishment for parents and guardians who keep their wards away from school;
- (vi) makes it incumbent on governments to provide adequate basic education opportunities for all school age children;
- (vii) outlaws fees in public primary and junior secondary schools and prescribes punishment for contravention of this provision; and
- (viii) provides for free tuition, books, instructional materials, classrooms, furniture and lunch.

In order to give meaning to the basis and intents of the UBE, the provision of the nine-year basic education in Nigeria, is at two levels, that is, six years primary education and three years junior secondary education. It also has the features of being free, universal and compulsory. According to Aduwa-Ogiegbaen (2006), the UBE is free because it is expected to promote accessibility to schooling, particularly among Nigerian school age youths who live below the poverty level.

In Nigeria, the National Policy on Education (FGN, 2004) states that secondary education is the form of education received after primary education and before the tertiary stage. The broad aims of secondary education, junior secondary education inclusive, within the overall national objectives are preparation for useful living within the society and preparation for higher education.

In specific terms, the secondary school should:

- (a) provide an increasing number of primary pupils with the opportunity for education of a higher quality, irrespective of sex, or social, religious and ethnic background;
- (b) diversify its curriculum to cater for the differences in talents, opportunities and roles possessed by or open to students after their secondary school course;
- (c) equip students to live effectively in modern age of science and technology;
- (d) develop and project Nigerian culture, art and language as well as the world's cultural heritage;
- (e) raise a generation of people who can think for themselves, respect the views and feelings of others, respect the dignity of labour, and appreciate those values specified under the broad national aims, and live as good citizens;
- (f) foster Nigerian unity with an emphasis on the common ties that unite in diversity;
- (g) inspire its students with a desire for achievement and self-improvement both at school and in later life (FGN, 2004: p23-24).

One of the means to achieve these stated objectives is that government is providing secondary education of six years duration, given in two stages, a junior secondary school stage (the last three years of basic nine) and a senior secondary school stage; each stage being of three years duration. The provision of the National Policy on Education is that the junior secondary school should be both prevocational and academic. The curriculum prescribes that all the basic subjects be taught to enable pupils to acquire further knowledge and develop skills. Students who leave school at the junior school stage may then go on to an apprenticeship system or some other scheme for out-of-school vocational training, while those who are more academically inclined go for higher studies. However, the government alone cannot provide the inputs to education without the involvement of other stakeholders in education such as the parents, the community, voluntary agencies, private individuals and non-governmental organisations. The directive of the National Policy on Education on parents and community involvement in providing basic education as stated in the policy are very clear. It states *inter alia* that:



1. government has embarked on action to make parents education-conscious and awaken in them a burning zeal for education for their children (FGN, 2004: Sec. 11(a));
2. government welcomes the contribution of Voluntary Agencies, communities and private individuals (FGN, 2004: Sec 11(12));
3. concerning the proprietorship of secondary schools, government welcomes the contribution of voluntary agencies, communities and private individuals in the establishment and management of secondary schools alongside those provided by the federal and state governments (FGN, 2004: Sec. 22(1));
4. local communities including the Parent/Teacher Association should be required to help to ease the problem connected with establishing junior secondary schools at low unit cost (FGN, 2004: Sec 22(1));
5. government's ultimate objective is to make education free at all levels. The financing of education is a joint responsibility of the federal, state and local governments. In this connection, government welcomes and encourages the participation of local communities, individuals and other organisations (FGN, 2004: Sec. 106); and
6. the local people, particularly parents, will be encouraged to participate in school management (FGN, 2004: Sec.96(8)).

It is clear from the declaration by the government stated above, that there is need for serious government-parent collaboration in the area of provision of education in the country. According to Goldring (1995), in the United States for instance, many forums exist for parent-government collaboration. In fact, citizen participation is guaranteed because local schools are governed by lay school boards, which are the trustees for local school systems nationwide. This basic right of lay control of schools has translated into numerous forms of parent participation in school governance: community councils, parent advisory councils, and parent association. Fantini (1980) summarises the level of participation in these types of forums from relatively low levels of influence where parents are clients responding to school requests, to much higher levels of influence where parents are equal partners in the educational process, and educators rely on community groups to set policies. Furthermore, reform efforts in numerous countries have increased the legitimacy of parent involvement in school affairs (Goldring, 1991).

Parents' involvement in children's education can be regarded as a major issue that calls for attention in ensuring students' achievement in schools, particularly in the learning of a foreign language like the English language. English language is a core subject in the JSS curriculum. Nigeria, being a multi-lingual and multi-cultural country has adopted English language as a medium of intra-national and inter-national communication (Fakeye, 2006). More importantly, English language has become the pivot on which the educational wheel of Nigeria rotates (Fakeye and Ogunsiyi, 2009). The language is the medium of instruction for all school subjects from the primary school level to the university, in addition to being a compulsory school subject that must be passed at all levels of education in Nigeria (Ajufo, 2007).

It is the recognised lingua franca in social circles involving various ethno-linguistic groups in the country (Onosode, 2004). It is also the official language in Nigeria and of the majority of the people in the world. Hence, it is an integral part of the social, political and educational life of Nigerians and people of the world. However, students' underachievement in English language at the secondary school level has been of great concern to many stakeholders in education (Onosode, 2004; Labo-Popoola, 2002; Ayodele, 1998; Cummins, 1994; Adepoju, 1999). Onosode (2004), Labo-Popoola (2002) and Cummins (1994) have approached this problem from the perspective of teachers' methodology while Faires, Nichols, and Rickelman (2000), Hara and Burke (1998) and Shaver and Walls (1998) seem to attribute it to lack of parental involvement in providing their children's educational material and resource needs that could enhance students' achievement. There is therefore, the need for parental involvement in the provision of basic education for their children to ameliorate this problem of students' underachievement. The importance of parental involvement, according to Comer and Haynes (1991), has reached a level of acceptance globally as a key factor that can help improve the quality of schools. However, acceptance, they maintain, does not always translate into implementation, commitment or creativity.

According to Drake (2000), much remains to be done. Schools and parents must cooperate and work collaboratively to improve the learning experience of all children. This is because the rationale behind parental involvement in education follows the reasoning that learning is most effective when there is congruence among school, home, and community. Functional parental involvement is considered to be an important aspect of school effectiveness. The aim of involvement mechanism is to

provide productive environments of learning which complement one another. The parents help the schools and the schools also help the parents in return. Students in school are confronted with critical social, emotional and environmental challenges. These challenges that students face cannot be solved by educators alone neither can they be solved by parents alone. More collaboration between the school and home will need to be focused on when dealing with these challenges.

Discussing the need for advance collaboration in the provision of education, Bronfenbrenner (1974, 1979, 2001 and 2004) argues strongly that parents' participation is critical to good education. Lightfoot (1978) also supports this view by describing the relationship between home and school as being worlds apart that needs to be bridged. Schools that recognise the interdependent nature of the relationship between parents and school, and value parents as essential partners in the education process will realise the full value of the collaborations (Carter, 2002). Such approach recognises the significance of parents and the contributions of schools as a necessary framework for working together in a complementary effort towards common goals to maximize success for students as learners (Christenson and Sheridan, 2001). Both school-to-home communication (teachers inform parents about school programmes and children's progress), and home-to-school communication (parents contact teachers about their children's school life) have been considered important (Epstein, 1995; Muller, 1993). Meaningful parental participation is essential for effective schooling. Families, communities and schools constitute important sources of influence on the psycho-education development of children and the best results are achieved only when these institutions work together. Families provide the social, cultural and emotional support that children need to function well in school (Comer and Haynes, 1991).

The motivational factors of the home such as encouragement as well as the interest that parents take in their children's education, and the aspirations they have for the future of their children are required to produce noticeable improvement in their children's school performance (Deutscher and Ibe, 2004). A research on parents' involvement in school in Israel indicates that the primary motive for parents' involvement is to help their individual child (Shapira and Goldring, 1991). If a student is aware that his parents are keen in contributing immensely to the school progress, such a child is likely to develop positive interest in his/her academic work. Epstein (1987) and Henderson (1987) report that schools that favour parental involvement

outperform schools with little parental involvement (Pena, 2000 in Wilkins, 2004). Other researches have highlighted a positive correlation between parental involvement and students' achievement (Redding, 1991; Pena, 2000; Guttman and Midgley, 2000; Wilkins, 2004).

Parental involvement is complex to evaluate because there are many ways in which parents can be involved. Parents' involvement in developed nations have been reflected in numerous aspects of the educational process from a variety of perspectives. This stems from the fact that parental involvement in schools has become a goal for many educators in the light of theoretical and empirical work suggesting that increased school-parent interaction can result in significant educational benefits (Seeley, 1984). There is an increase in individual involvement as many reports show that parental involvement contributes greatly to students' achievement. Parents can be involved in schools as individuals or as members of committees, councils, and groups. Individual parental involvement may include volunteering, tutoring, working in the school as teacher aides, parent training programmes, choice of schools for their wards, and giving guest lectures.

In addition, parents have a greater potential for influence when formally organised. This can be through mandate or citizen initiation. Mandated parent groups include advisory committees, while voluntary groups include Parent-Teacher Associations. Some groups are affiliated with larger organisations, including religious groups; they can also link with a larger more powerful national organisation to help them influence the educational establishment. According to Ojedele (1994), parental representation in schools' governing boards and their active participation in the running of Parents-Teachers Association meetings are avenues for parents to be directly involved in contributing to school matters and other issues relating to the academic performance and the moral tone of the school. However, the effectiveness of parent groups is often influenced by the extent to which members of the group are representative of the community and the extent to which relevant issues link the group with the school. Nevertheless, there is a serious dearth of research evidence documenting the nature (pattern) and magnitude of parental involvement in their wards' education in Nigeria, especially at the junior secondary school level. Therefore, there is need for research efforts in this direction.

Epstein (1995) has developed a framework defining six different types of parental involvement. These parental involvement types which will guide the present

study are: 'parenting' which refers to basic parenting obligations for the child's health, safety, and preparedness for school and for providing positive home conditions that support educational progress; while 'communicating' refers to the basic obligations of schools to communicate with families and families with school regarding school programmes and student's progress. This creates a two-way communication channel between home and school. Next is, 'volunteering' which refers to parents' participation in volunteering at school (such as assisting teachers, administrators, or students in classrooms) and in participating in school activities and events (such as students' performances in plays, sports, and other events). Another type is 'learning at home' which refers to parental involvement in student's learning at home, to parent-child-initiated requests for help, and to teachers' ideas about parents' involvement in home learning activities. The last two types are: 'decision making' which refers to parental involvement in decision-making activities at school (such as participation in advisory councils, parent-teacher organisations, parents advocacy groups, and other school, district, or state level educational committees) and 'collaborating with community' referring to school and parent collaborations with communities and other community agencies that enhance the learning opportunities of children (such as programmes for after-school care or health care, cultural events, and community services).

Basically, certain factors are essential for parents to be involved in their children's education. Several of such factors may have been proposed elsewhere, for example, ethnicity (Desimones, 1999; Mullis, Rathage and Mullis, 2003), and home language (Odinko, 2002). Of interest in this study are factors relating to family socio-demography. Socio-demographic factors are those that affect the growth and development of a child within and between the different environments of the family. Among these are: parents' education, parents' occupation, parents' income, family structure (size, number of children and marital structure), child's gender and parental educational expectation for their children that could influence parental involvement in the provision of basic education for their wards.

Parents' educational level and occupational status are of central concern in this study because the level of parents' education boosts the understanding of the need for parents to be involved in their children's education (Oettinger, 2005). Educated parents make greater investments in their children's education by providing probably higher levels of goods and services that complement learning and by devoting more

time to their children. The educational level of the mother is especially important because mothers are their children's first teachers. It is the mother who is usually the primary caretaker.

Muller (2006) argues that parents with higher levels of education often have better knowledge about how to make a system, like a school, work to their child's advantage. Even before a student enters school, parents may provide a rich home environment to prepare their young child for learning and success. As a consequence, parents' educational level is found to be an important factor that influence parental involvement as observed in such studies as Frempong and Ma (2006); Sy and Schulenberg (2005) and Muller and Schiller (2000) in Wilkins (2004). Wilkins (2004) and Mullis, Rathage and Mullis (2003) also found a positive correlation between parent's educational level and achievement. Closely related to parents' education in influencing involvement is their occupational structure. Leitch and Tangri (1988) found employed parents to be more involved in the provision of children's education than non-employed parents and that parents gave unemployment as one of the main reasons for not participating in their children's education. Similarly, educated parents who have achieved career and economic success can be role models of achievement for their children (Wentzel and Feldman, 1993 in Mullis *et al*, 2003).

There are also indications that parental level of education is a strong factor of family financial resources that influence achievement. In view of this, recent studies (Mullis, Rathage and Mullis, 2003 and Pong and Ju, 2000) have focused on the importance of the economic structure of the parents in educating a child. Parents with money help their child succeed in school only if they maintain a relationship with their child that facilitates their productive use of the money. Likewise, parents with knowledge about how the system works are effective only if they offer guidance appropriate to the child's needs. The form which involvement takes depends on the resources of the parents (such as money and education), the interests and priorities of parents, and the needs of the child. It is through the relationships parents have with their child that their resources are conveyed. Research suggests that lower incomes account for at least half and possibly all of the negative effects of parental involvement on educational attainment (Pong and Ju, 2000; McLanahan and Sandefur, 1994; McLanahan, 1985). By implication, parents that are not employed or who hold low-paying jobs are more likely not to be involved in their children's education. This view seems to be corroborated by Mullis, Rathage and Mullis (2003)

who argue that the children of educated and affluent parents generally have more advantages and opportunities for achievement. This is because these categories of parents are more involved in their children's education.

Family structure (size, number of children in a family and marital structure) plays a vital role in parental involvement and children's achievement in most school subjects, especially in English language. This is because it is essential for parents to provide the emotional support, discipline and material necessities needed by the students for effective learning. Changes in family structure affect resources (time and money) and the needs given to children. Increased family size would increase available time and money resources that parents spend on their wards. It also usually increases the amount of household care, services or both (Downey, 1995). Social scientists interested in the family and those who study educational stratification such as Raley, Frisco and Wildsmith (2005) have produced convincing evidence that parental divorce is negatively associated with educational success. Thus, students who experience family disruption or have less parental supervision and attention to issues such as course placement may be disproportionately set on a less ambitious path because of a temporary reduction in their school performance (Razzaque, Streatfield and Evans, 2006). Arguments focusing on family structure generally take the position that belonging to single parent families cause lower academic achievement because of decreased resources available to children. On the average, children in single parent families have fewer resources than children in two-parent families. Researches clearly show that children of single mothers are more likely than children of married mothers, to live in poverty or to experience economic hardship (Hernandez, 1993; Lichter and Eggeben, 1993; Eggeben and Lichter, 1991). Compared to children living with both parents until adulthood, children from single parent families have lower educational expectations, poorer school attendance, and lower grades (Sun and Li, 2001; Amato, 2001; Hanson, McLanahan, and Thomson, 1998; and Astone and McLanahan, 1991). They are also less likely to graduate from high school or to attend college ( Ploeg, 2002; Biblarz and Gottainer, 2000; Pong and Ju, 2000; and McLanahan and Sandefur, 1994). It is not surprising that when both parents now support the household, the economic hardship is reduced.

Another parental resource that children living with single parents may have less of, is time with parents (Bianchi and Sayer, 2000). Research has consistently shown that the total amount of parental supervision and involvement tends to decrease

with single parent (Pong and Ju, 2000; McLanahan and Sandefur, 1994; and McLanahan, 1985). Raley, Frisco and Wildsmith (2002) conclude from the analysis of the data from the National Survey of Families and Households (NSFH) that children who lived with a cohabiting mother fare exceptionally poorly and sometimes are significantly worse than children who lived with a divorced or remarried mother. They conclude that studies that ignore cohabitation probably underestimate the negative effects of divorce on educational outcomes.

Generally, gender equality among children of both sexes in modern times has attained greater acceptance in society, and as such one would expect parents to be more predisposed to treat their female and male children equally (Carter and Wojtkiewicz, 2000). Nevertheless, the results of some recent studies suggest that parents favour male over female children in various ways. For example, researchers have reported that fathers than mothers who have sons, are more involved with these children (Harris and Morgan, 1991), whereas mothers of sons are more concerned about child's obedience and the possible negative effects of their own employment on their children (Downey, Jackson and Powell, 1994). The literature on gender role maintains that parents treat their female and male children differently due to the patriarchal values of society which elevate males over females in the social order (Wellesley College Center for Research on Women, 1992; Lorber, 1994). Research equally shows that traditional socialisation practices have a male bias: male child, as compared with female child, is provided with greater opportunities for personal autonomy and achievement (Entwisle, Alexander, and Olson, 1994; Eccles et al, 1990; Saltiel, 1985).

Specifically, studies have linked gender differences in outcomes to socialisation that traditionally, has emphasised personal relationships, dependency, conformity, and submissiveness for females, and personal achievement, autonomy, and assertiveness for males (Marini and Brinton, 1984 and Block, 1983). Further, females experience a reduction in self-esteem during adolescence, thereby negatively affecting their aspirations and attainments (Wigfield and Eccles, 1994; Smith, 1992). This body of research suggests that parents may be involved with female and male children in ways that produce important gender differences. There is, therefore, the need to further explore the presence and strength of this difference in gender preference in this study.



Parents' educational expectation is the notion as to what the parents want their children to be in life. These expectations are goals that make up the power that propels the parents to be involved in the future of their wards. They also motivate their actions. It is expected that parents with high expectation will tend to be more involved in their children's performance in school and also monitor this performance. This also has positive influence on the children in that they also tend to live up to their parents' expectations. According to Patrikakou (2004), parents' high educational expectations constitute a powerful way through which parents can continuously encourage the educational attainments of their adolescents in school and beyond. Sociologists and developmental social psychologists now realise that what parents do with and for their child make a difference in how a child succeeds in school. A number of researchers have also emphasised the positive effects of parental expectation on a range of educational outcomes e.g. achievement in English language (Frempong and Ma, 2006; Sy and Schulenberg, 2005; Patrikakou, 2004; Astone and McLanahan, 1991; and Fehrmann, Keith, and Reimers, 1987). Students from a home environment that values academic achievement and promotes intellectual activities achieve better academically (Fraser, Welch, and Walberg, 1986; Kurdek and Sinclair, 1988). Parents with high expectations for their children cooperate actively with teachers and schools, thus improving their children's educational opportunities and attainment (Fehrmann *et al*, 1987; Lareau, 1987; Stevenson and Baker, 1987). Frempong and Ma (2006) also find out that parents' educational expectation is an important predictor of children's achievement, especially in the area of reading.

However, for parents to be involved, their perception on the purpose of basic education must be right. According to Ojedele (1992), some parents do not value education for their children. Others feel powerless to influence the school, while others still, may believe that the running of schools should be left to the experts. Some parents believe they do not have the knowledge or social skills for volunteering in the classroom or serving on a parent advisory committee. Still, other parents may feel it is not their responsibility to be involved in their children's education once the child has started school and he/she is now in secondary school. Perhaps, these various conceptions of basic education, apart from hampering children's learning are most likely to have negative implications on the development of other sectors of a nation, because the quality of the product of education are major inputs into these sectors.

Once the quality of those personnel inputs are poor or inadequate, it spells doom for the other various sectors.

In Nigeria, the dearth of studies on parent involvement is serious both at the primary and secondary levels. It is noted that the degree of parents' involvement usually declines drastically as children reach the teenage years (Epstein, 1995; Catsambis and Garland, 1997). These reasons serve as rationale in this study to examine parents' perception of their involvement in the provision of basic education at the Junior secondary class two level with a view to provide empirical evidence of the nature of such involvement and their influence on students' achievement in English language in Ogun State. Furthermore, a critical examination of available literature on parents' involvement such as Ojedele (1992), Inyang (2000), Ogunsanwo (2003), Wilkins (2004), Sy and Schulenberg (2005), and Frempong and Ma (2006), reveals a lack of focus on or interest in family socio-demographic variables (parents' education, parents' occupation, parents' income, family size, number of children and marital structure, child's gender and parental educational expectation from their children) when taken together, to identify and explain the strengths of interaction among these variables in terms of cause-effect relationships. For example, Ogunsanwo's (2003) study looks at parents' involvement in homework only while Inyang (2000) studied community participation in promoting access, equity and quality in basic education. Besides, methodological limitations are prevalent in most of the parents' involvement research reports either mentioned or described above. Limitations are also observed in the design used, inconsistent definitions of parents' involvement and/or in the instrument used to measure parent's involvement. Hence, the present researcher considers it necessary to fill these notable gaps by bringing some of the factors that influence parental involvement together to search for causal explanation, and provide the pattern of parental involvement in the provision of basic education to their wards in Ogun State.

## **1.2 Statement of the Problem**

Education leads to the development of a nation as a whole and emphasis has been laid on Education For All (EFA) as a goal that must be achieved by all nations of the world. The Nigerian government being a signatory to some of the global goals on education like the OAU Decade of Education in Africa (1997-2006), the Durban (1998) and Dakar World Education Forum, has a national action plan to achieve these

goals. Furthermore, a cursory look at the quality of education in Nigeria reveals that there is a nation-wide concern over students' performance in academics generally and in English language in particular. Students receive instruction in English language, and the failure rate according to researchers, is on the increase and the percentage of those with credit pass and above is falling. However, it is obvious that government alone cannot provide all the inputs to education without the involvement of other stakeholders in education such as parents, the community, voluntary agencies, private individuals and non-governmental organisations.

There is a need for serious government-parent collaboration in the area of provision of education in the country. Parents' involvement in education cannot be overlooked in the provision of effective education for children and in ensuring their achievement in school. Poor students' performance is likely to be caused by some factors such as family socio-demographic factors (parents' education, parents' occupation, parents' income, family size, number of children in the family, marital structure, child's gender and parental educational expectation for their children). Not many studies have examined the causal influence of these variables in a wholistic manner to understand parental involvement and students' achievement in English language. Others have concentrated on teachers' methodological approaches to solve the problem of student under achievement. If the causal linkages among these variables are well known, parents' involvement in the provision of education and students' achievement in English language can be improved. In view of this statement, this study, therefore, sought a causal explanation of family socio-demographic factors that influence parental involvement and students' achievement in English language in Ogun state.

### **1.3 Research Questions**

Based on the stated problem, the researcher sought to provide answers to the following research questions:

1. What is the most meaningful causal model involving family socio-demographic factors and (a) parental involvement in education, and (b) students' achievement?
2. What are the directions as well as estimates of the strengths of the causal paths of the variables in the models?
3. What are the direct and indirect effects of the variables on parents' involvement in education and students' achievement in English language?

4. What proportion of the total effects are (a) direct and (b) indirect?

#### **1.4 Scope of the Study**

This study is interested in the extent to which the stated family socio-demographic factors explain parental involvement and students' achievement in English language by constructing and testing a ten-variable model for providing a causal explanation for the provision of education at the basic level for Junior Secondary School two (JSS II). Since the study is not interested in any other factors, inferences will only be made with respect to the subject and variables used in this study.

#### **1.5 Significance of the study**

The study provides empirical evidence for a better understanding of family socio-demographic factors that could exert a causal influence on parents' involvement in the provision of basic education and students' achievement in English language. It provides empirical evidence for developing and improving parental involvement in basic education at the junior secondary level. It has also provided information useful to educational policy makers in formulating educational policies, regarding the level at which parents can be involved in the administration and management of education in the State. The study provides empirical bases for improving the performance of guidance counsellors as they advise parents on their respective roles towards enhancing better involvements that can positively affect their children's performance. It provides parents with useful information on the effect of being positively involved in their children's academic work and how this can exert great impact on their performance. It also provides some baseline information for further researches in the area of parental involvement since not much work has been done with regards to parental involvement in children's academic performance in Nigeria.

#### **1.6 Definition of Terms**

**Family Socio-Demographic Factors:** As used in this study, family socio-demographic factors are those that affect the growth and development of a child within and between the different settings of the family. The factors include family size, number of children, parents' education, parents' occupation, child's gender, parental expectation of child's performance, parents' income and marital structure

that can influence parental involvement in the provision of basic education and students' achievements.

**Parental Involvement:** This range from parents support for their children's schooling by attending school functions and responding to school obligations at school level, to helping their children improve their school work, providing encouragement, modeling desired behaviour, monitoring home work, and actively tutoring their children at home.

**Parents' Perception of Basic Education:** This is the views of the parents about what basic education is and seeks to promote.

**Basic Education:** This is the early childhood care and education; and nine years of formal schooling that comprises six years of primary education and three years of junior secondary education.

**Universal Basic Education:** means 'early childhood care and education, the nine years of formal schooling, adult literacy and non-formal education, skills acquisition programmes and the education of special groups such as nomads and migrants, girl-child and women, almajiri, street children and disabled groups' (UBE, 2004).

## **CHAPTER TWO**

### **LITERATURE REVIEW**

This chapter examines some related previous studies and research in order to shed more light on the theoretical and empirical bases for the present study. Library resources and the internet have been searched to gather and ascertain the relevant information to this study. The literature review comprises as following:

- 2.1 Basic Education and Its Implementation in Nigeria
- 2.2 Concept and Nature of Parents' Involvement in the Provision of Basic Education
- 2.3 Epstein's Six Types of Parental Involvement in the Provision of Basic Education Framework
- 2.4 Bronfenbrenner's Ecological System Theory
- 2.5 Parental Involvement in the Provision of Basic Education and Policy Enactment
- 2.6 Parents' Involvement in the Provision of Basic Education in Nigeria
- 2.7 Empirical Studies on Parental Involvement in the Provision of Basic Education
- 2.8 Parents' Involvement in the Provision of Basic Education and Students' Achievement
- 2.9 Family Socio-Demographic Factors and Academic Achievement in English language
- 2.10 Appraisal of Literature

#### **2.1 Basic Education and Its Implementation in Nigeria**

Western education in Nigeria can be dated back to the coming of the Christian missions to Nigeria. The real western education started as a result of the abolition of slave trade by Britain in 1807. However, the missionaries that started education in Nigeria did so because they needed clerks, interpreters, housekeepers, messengers,

typists in government services and commercial houses, not primarily to get them literate and liberated from ignorance, superstition and disease which was prevalent then (Inyang, 2000). This also opened up avenues for many Nigerians to communicate with the outside world thereby getting them exposed to other parts of the world.

Education in Nigeria is no longer a private enterprise, but rather as a huge government venture (Inyang, 2000; Obemeata, 1996) that demands government's wholehearted intervention and active participation. Education is also recognised as one of the fundamental right of every child. This is contained in the United Nations' Declaration of Human Rights of 1948. (UNESCO, 2002a). Education is now seen as an important instrument for achieving individual and societal development. The government sees it as a means of meeting individual needs, the societal need of development and as a means of meeting up with the rapid growth of the modern world. Lynch (1997) posits that the fundamental basis for education is the fact that it is a right in itself. Lynch (1997) and Fagerlind and Sana (1989) equally see education as an instrument for changing traditional attitudes, beliefs, and practices that are inimical to human and national development. Browne and Barrett (1991) and Hoeck (1997) see education as having a utility value when they assert that education significantly correlate with improved living standard, reduced infertility, reduced maternal and child mortality, reduced early marriage, which is common in developing countries, and improved hygienic and nutritional awareness and practice.

According to UNESCO (2001), basic education refers to all forms of organised learning and training, including access to information to equip the individual to cope better with work and family responsibilities and change their image of themselves. In like manner, Jomtien's Declaration and Framework of Action on Education for All (1996) defines basic education as a process which encourages articulation of formal, non-formal and informal approaches to education and structures for the all round development of human capital and potentials. Basic education, according to Okpala (2006), is that type of education capable of meeting the basic learning needs of children, youths and adults. Ogundare (2006) sees it as the starting-point of education which involves learning how to learn and moves on to continuing education, life-long education and mass literacy.

The launching of the UBE by the Federal Government in Nigeria is not the first attempt towards the provision of education for all. In fact, its precursor was the Universal Primary Education (UPE) which was introduced in the 1950's and 1976.

The introduction of UPE scheme in 1955 by the Western region and in 1956 by the Eastern region witnessed provision of free primary education for all, shortening of the duration of primary education from 8 to 6 years, while promotion from one class to another was automatic. In 1976, free education was re-introduced and it meant the non-payment of school fees, and the provision of essential school facilities such as chairs, desks and books (Obidi, Aladejana and Kobi in Inyang, 2000). Though UPE forcefully took off with much enthusiasm and political commitment that nurtured it, it was unable to achieve its desired goals due to the confrontational politics of 1979-1983, and the sharp drop in national revenue in the early 1980s occasioned by the global oil crisis of the period and the mismanagement of resources by the authoritarian military regimes that ruled Nigeria for several decades (Obanya, 2002). As a result, several social services - education, health, social welfare and transportation, witnessed decadence and Nigeria became one of the poorest countries of the world by 1991 (Aduwa-Ogiegbaen, 2006).

The Universal Declaration of Human Rights, adopted by the United Nations in 1948, (UNESCO, 2002a) asserts *inter alia*, that access to quality education is a fundamental human right. This assertion has been embraced by the world community, and further elaborated in several subsequent instruments emanating from world conferences such as the Jomtien World Conference on Education for All (WCEFA), the Cairo International Conference on Population and Development of 1994, and the Copenhagen World Summit for Social Development. The Jomtien World Conference on Education for All (EFA) foresaw the need for comprehensive policy reviews at the turn of the 1990s for the purpose of enabling all nations to assess and re-assess their efforts for reaching their own Education-for-All (EFA) objectives and revise their plans accordingly. The most in-depth evaluation of basic education ever undertaken has been the EFA 2000 Assessment. The assessment underlines significant gains since the Jomtien World Conference on EFA in the provision of basic education in many countries. The 2000 EFA Assessments recognise significant efforts made by governments, international organisations, non-governmental organisations and civil society. However, in spite of the efforts made, the achievements and development in several areas, especially the education of girls and women, have presented unsatisfactory results (Aduwa-Ogiegbaen, 2006)

There is no doubt that the devastating effects of economic globalisation and the social, political, and economic impact coupled with the disparities they are



creating around the world represent key challenges for educational endeavours, especially in developing countries. It must be recognised that a broader vision of basic education needs to be promoted in order to enhance or boost human development and socio-economic progress. Article 2 of the Jomtien Declaration holds that what is needed in basic education is an 'expanded vision' that surpasses present resource levels, institutional structures, curricular and conventional delivery systems, while building on the best in current practices (UNESCO, 2002b). The expanded vision of basic education involves several concerns such as the contemporary emergence of knowledge society organised around the creation and management of knowledge, information and ideas. It also involves the education of people of all ages from early childhood to adulthood with lifelong learning as an essential component of basic education.

As the needs for basic and lifelong education grew, the government in Nigeria took the bull by the horn by introducing the Universal Basic Education Programme (UBE) in September 1999. The declaration of the Universal Basic Education (UBE) was, therefore, in response to advocacies of the Jomtien World Conference on Education and also a national action plan for achieving the globally agreed EFA goals. Analysing education from human rights angle tend to give UBE a sound ground. Education is a pre-condition for the emancipation of the individual from ignorance, poverty and human slavery and for economic empowerment.

In declaring the provision of Universal Basic Education (UBE), government is showing some measure of commitment to the eradication of illiteracy among the populace, the promotion of functional literacy, ignorance and poverty as well as stimulating and accelerating national development, political consciousness and national integration. Also, as a signatory to the Declaration of the Jomtien World Conference on Education for All (1990) and the Dakar EFA Forum (2000), Nigeria intends to re-affirm its adherence to the globally agreed goals of EFA and the education related Millennium Development Goals (MDGs). It is also one of the strategies for realising the nation's economic agenda as enunciated by the National Economic Empowerment and Development Strategies. The other covenants and protocols to which Nigeria is a signatory include:

- (i) the OAU Decade of Education in Africa (1997-2006) on inter-African cooperation calling for a massive eradication of illiteracy within the shortest possible time span;

- (ii) the Ouagadougou (1992) pan- African declaration on the education of girls and women;
- (iii) the Amman re-affirmation (1995) calling for the forceful pursuit of the Jomtien recommendation on basic education for all;
- (iv) The Durban (1998) statement of commitment to the promotion of education for all with a strong emphasis on the vigorous pursuit of basic education, and
- (v) Dakar World Education Forum (2000) which sets an agenda for education in the 21<sup>st</sup> century.

According to Ogundare (2006), two major factors informed the launching of the UBE by the Nigerian government. First, there were important indicators of educational progress which showed that Nigeria was lagging behind expectation at the time the programme was launched in 1999. It was also observed that matters were worse when gender and geographical correlates were taken into consideration. Second, there were substantial shortcomings in Nigeria's institutional and personnel capacities for the delivery of a sound basic education for all citizens. Available instructional facilities, teaching and learning materials as well as qualified teachers were grossly inadequate. There were also wide spread disparities both in quality and access to basic education across the nation. It was observed that the problem highlighted above appeared worse at the primary, adult and non-formal education where solid foundations ought to have been laid for higher forms of education.

The Universal Basic Education programme in Nigeria can also be perceived as a response to section 19 of the 1989 constitution, section 18(1) of the 1999 constitution which states that: "Government shall direct its policy towards ensuring that there are equal and adequate education opportunities at all levels."

The major objectives of UBE are as follows:

- (a) developing in the entire citizenry a strong consciousness for education and a strong commitment to its vigorous promotion;
- (b) the provision of free, universal basic education for every Nigerian child of school age;
- (c) reducing drastically the incidence of drop-out from formal school system, through improved relevance, quality and efficiency;
- (d) catering for the learning needs of young persons, who for one reason or another have had to interrupt their schooling, through

appropriate forms of complementary approaches to the promotion of basic education; and

- (e) ensuring the acquisition of the appropriate levels of literacy, numeracy, communicative and life skills as well as the ethical, moral and civic values needed for laying a solid foundation for lifelong learning (UBEC, 2004).

## **2.2 The UBE and Its Vision**

The UBE vision aims at righting the wrongs of the unfulfilled curriculum dream. The old curriculum turned out graduates who were not self-reliant, but were only fit for white-collar jobs. Life-skills and coping skills were ignored. Technical and Pre-vocational skills were relegated to second place in preference to Western education, which further promoted white-collar jobs. Emphasis was also placed on formal education at the expense of the non-formal. The UBE vision is a bottom-up approach with teachers as end-users playing active roles in the curriculum process. The teachers are involved in the curriculum review and text development processes. The learners benefit from an environmentally friendly text, while the pedagogical process is interactive and child-centred. The UBE vision encompasses every child within formal, non-formal and informal settings. Philosophically, it will have to consider four sets of factors:

The Learners, from primary to the third year of junior secondary, their structure, characteristics, hopes, fears and aspirations. The Primary Education Phase, the values, attitudes, knowledge and skills acquired at this phase and the need to consolidate them and broaden their scope at the junior secondary phase. The Existing Junior Secondary System, its curriculum and other related features and the need to adapt them to the demands of the times, as well as to the special requirements of young people in the twenty-first century; and Complementary Approaches: a special consideration for those who may be out of school and will need non-formal education in the junior secondary bracket.

The UBE vision is structured to promote a learner and society centred philosophy with a curriculum that strives to relate the art of literacy and numeracy to that of skills acquisition in the primary. It is to consolidate the gains of traditional disciplines of languages; mathematics and science, social science, pre-vocational subjects and technology to the goals of basic education in the junior secondary

classes. The subject disciplines highlighted are to be used to consolidate literacy, numeracy, life-skills and learning-to-learn skills.

According to Gidado (2001), the UBE vision aims to produce children who are not limited in content to just knowing, but are also involved in doing. The UBE curriculum includes the teaching of local arts and crafts at the primary and junior secondary school levels; as well as pre-vocational skills at the junior secondary school. It also teaches essential life skills required for daily living, e.g., health and sexuality education, HIV/AIDS education, population and family life education, aesthetics and environmental education, etc. Other areas of focus are teaching learning-to-learn skills, creative skills, fundamental human rights and respect for the rights of others, and sports for healthy physical and mental development. Also included in the curriculum is the teaching of citizenship education and the ideals of democracy, information technology and scientific knowledge, cultural values, ethics, morality, discipline and peaceful existence.

It is expected that this rich curriculum content will lead to specific learning experiences for the pupils and while the teacher is perceived as a helper involved in assisting pupils to know and be able to do through interactive contacts and not as a passive instructor. Rote learning is therefore, discouraged as the outcome of learning achievement. The learning environment goes beyond the conventional classroom to the pre-vocational workshop, the school farm, the sports field and so on.

The UBE curriculum is enriched with the essentials to equip children who may not be able to go beyond the third year of junior secondary education before entering the job market. There is a shift in the objective of assessments from how much a child knows to how much he or she is able to do. The activities of UBE involve massive provision and improvement of existing learning facilities which comprise instructional materials of good quality. It also provides supervisory/inspectorate personnel and ensures correct mix of high quality. It further ensures social mobilisation and advocacy for effective participation in, and support for UBE programmes in order to instill the sense of ownership by the participating community.

The specific activities of UBE include, among others, development and enforcement of comprehensive monitoring and evaluation mechanisms to ensure the attainment of minimum standard and eventually high quality teaching and learning in schools. However, to ensure quality, the following are put in place: (i) establishment of adequate facilities and teachers (ii) establishment of enrolment, retention, including

benchmarks for annual projection for the next five to ten years (iii) planning to provide support to states to establish targets and how to achieve them (iv) provision of support to states and other providers for renovation, construction, furnishing, training and retraining of teachers and allied staff; provision of exercise books, pencils, pens, erasers, sharpeners, basic textbooks; such as English, Mathematics, Primary/Integrated Science and Social Studies; first aid kits; school feeding; academic support such as library, etc; students' support such as guidance and counseling, sports, health ; innovative activities, etc.

To ensure access and equity, the following are also considered: (i) mobilisation and advocacy for enrolment, retention and completion of learners in the compulsory nine- year basic education programme (ii) focus on the girl-child (iii) focus on the boy-child (iv) focus on special need groups (v) focus on the street children (vi) focus on Quranic integration within UBEP and (vii) focus on other cross-cutting issues such as HIV/AIDS, etc. (UBEC, 2004).

At the Dakar EFA Forum of April 2000, in which Nigeria was an active participant, the target date for attaining Education for All was shifted from 2000 to 2015. The Forum in Dakar re-affirmed the following EFA goals, which the countries of the world are to pursue vigorously: (i) expanding and improving comprehensive early childhood care and education, especially for the most vulnerable and disadvantaged children (ii) ensuring that by 2015 all children, particularly girls, children in difficult circumstance, and those belonging to ethnic minorities have access to a complete free and compulsory primary education of good quality (iii) ensuring that the learning needs of all young people and adults are met through equitable access to appropriate learning and life-skills programmes (iv) achieving 50% improvement in the levels of adult literacy by 2015, especially for women, and equitable access to basic and continuing education (v) eliminating gender disparities in primary education by 2005, and achieving gender equality in education by 2015 with a focus on ensuring girls' full and equal access and achievement in basic education (vi) improving all aspects of the quality of education and ensuring excellence of all, so that recognised and measurable learning outcomes are achieved by all, especially in literacy and essential life skills (EFA Report, 2005 and Dakar World Conference Forum, 2000).

The Federal Republic of Nigeria (2004) recognised that educational services facilitate the implementation of educational policy, the attainment of policy goals and

the promotion of effectiveness of educational system. Accordingly, the goals of educational services were set to develop, assess and improve educational programmes; to enhance teaching and improve the competence of teachers; and make learning experience more meaningful for children. These goals also include making education more cost-effective; promoting in-service education; and developing and promoting effective use of innovative materials in schools.

To achieve the goals, the federal government in the National Policy on Education stated that each state and local government should set up Teachers' Resource Centres; the federal and state governments will set up Educational Resource Centres and set aside a predetermined percentage of their educational funds to support educational research, development and innovation. Provisions were also made for the establishment of libraries in all educational institutions and school health services. The National Policy on Education also recognised the importance of Information and Communication Technology (ICT), in-service education for teachers, virtual library, and guidance and counseling facilities for maladjusted children and those who find it difficult making career choices. It would seem from the aforementioned that the Nigerian government-planned response to the implementation of the UBE scheme in the country is in order. It is the hope of stakeholders that the objectives of EFA and Dakar initiatives are achieved by the year 2015, even when other countries of the world such as Caribbean, South Asia have almost reached 100% achievement level.

### **2.3 Concept and Nature of Parent Involvement in the Provision of Basic Education**

Most parents are primarily interested in activities that involve their children; others want to be helpful in classroom activities; still others are more interested in the school programme and practices. Comer and Haynes (1991) categorise involvement into three levels. At Level 1 parents are elected by the parent group to participate on the school planning and management team, Level 2 involves helping in classrooms or sponsoring and supporting school programmes, and Level 3 involves general participation in school-related activities.

The first level is the most sensitive, critical and crucial because parents are a natural link to the communities in which schools are located. This link is particularly important when teachers and other school staff do not live in the neighbourhood in which they teach or work. Parents bring a parent perspective to planning and

management activities. They also bring an understanding of needs and experiences of their own children that can help teachers to plan age, and culturally appropriate social and academic programmes in the classroom. Parents who demonstrate leadership skills are usually elected by the parent group to represent them (Comer and Haynes, 1991).

Parents involved at the second level participate in day-to-day classroom and school activities and join whatever parent organisation that exists. According to Comer and Haynes (1991), when parents participate at this level the school becomes a part of the community. According to these scholars, when parents develop a strong, positive attachment to the school, a positive attachment of students to the staff and programme of the schools is more likely. Parents and school personnel are then able to work together to motivate desirable academic and social performance among students. The third level is when parents derive a sense of pride and satisfaction from seeing their children perform. Students experience approval and appreciation from their parents and the staff during these general activities.

Parental involvement may be implemented through different roles such as volunteer, paid employee of the school, audience, decision maker or adult learner (Gordon, 1979). The involvement may reflect specific action areas such as teaching, providing resources, learning or decision making (Flammer, 1981). Parental involvement can include activities where the parents receive information and provide limited help in the school. It can also involve activities where parents provide assistance in the school under the direction of the professional (e.g. teachers or principal). Involvement can also help mobilise resources to help the school acquire new instructional materials, or parents can volunteer to tutor children in school. This involvement of the parent can also be activities in which they participate in making decisions regarding educational policy.

According to Frempong and Ma (2006), all the identified critical factors of parent involvement can be summarised as: home discussion, home supervision, home-school communication, volunteering work for school, and parent's expectation. Home discussion about school has been found by previous studies to be associated with student's higher academic achievement (Christenson, Rounds and Gorney, 1992; Keith, 1991; Walberg, 1986). High achieving students regularly communicate with their parents about school life (de Kanter, Ginsburg and Miline, 1986). Parents of high achieving students have rich verbal interaction with their children, delivering verbal

cues, directions, guidance and encouragement (Christenson et al, 1992; Gonzalez and Blanco, 1991). Sui-Chu and Willms (1996) conclude that it was involvement at home, particularly in discussing school activities and helping children plan their programmes, that had the strongest relationship to academic achievement. Chao and Willms (2002) in a study of the effects of parenting practices on children's outcome, based on analysis of Canada's National Longitudinal Survey of Children and Youth (NLSCY), found that parenting practices have important effects on a child's social and cognitive outcomes.

Home supervision often includes such things as parents structuring of children's time for homework, modelling children's learning, encouraging children to read at home, and limiting the time children watch television (Christenson et al, 1992). Closely linked to this is parents' tutoring programmes. These programmes are aimed at helping parents to support their children's school programme by tutoring them at home. The tutoring programmes are usually quite structured and provide parents with specific learning objectives in reading, language, mathematics, and study skills. Hence, parent tutoring is a way for individual parents to work with their children at home to reinforce school efforts. In summary, parents setting standards, enforcing rules, and encouraging discussion, negotiation, and independence is associated with students' higher academic outcomes (Christenson et al, 1992).

Parents' involvement in homework could affect learner's achievement in most school subjects (Balli, 1995), especially in English language. Therefore, to improve academic achievement of students in English language, Onosode (2004), citing Ortiz and Wilkinson (1991), suggests the creation of educational environments that are conducive to students' academic success. Such environments according to them reflect a philosophy that all learners can learn effectively and achieve when parents make the environment conducive for them to learn. Many studies have documented the significance of parents' involvement in homework (Fabian, 2002, in Lindner, 2004; Simon, 2004; Ogunsanwo, 2003; Kohl, Lengua and McMahon, 2002; Cooper, Lindsay and Nye, 2000; Walker, Hoover-Dempsey, Whetsel and Green, 2004). This is based empirically on the evidence that parents' involvement in their children's school-work is positively related to academic success. In other words, parents who help in their children's homework and check their school works with them tend to develop a good home-school linkage, which is highly essential for children's success. It also acts as a bridge of communication between home and school on issues related



to students' learning (Cosden, Morrison, Albanese and Macias, 2001). Furthermore, Scheideman and Werby (1996) noted that parents could help children establish good learning habits and promote active lifelong learning by assisting them to perform their homework. Such parental involvement seems to motivate children because they believe that they do better in school when their parents support them in doing their homework (Walker et al, 2004; Hoover-Dempsey et al, 2001). According to Lindner (2004), parent's involvement in homework has been found to increase academic results, regular completion of homework (Fabian, 2002), return of homework (Ogunsanwo, 2003) and the development of more positive attitudes towards school (Freytag, 2001).

Looking more closely at the research on parents' involvement, there are strong indications that the most effective forms of parents' involvement are those which engage parents in working directly with their children on learning activities in the home. Programmes which involve parents in reading with their children, supporting their work on homework/assignments, or tutoring them using materials and instructions provided by teachers, show particularly impressive results (Faires, Nichols and Rickelman, 2000; Sui-Chi and Willms, 1996). The research on the effectiveness of parent involvement with older students often focuses on different forms of participation, for example, parents' monitoring of homework, helping students to make post secondary plans and guiding them to select courses which support these plans, parent-school agreements on rewards for achievement and behavioural improvements, as well as some of the "standby" functions, such as regular home-school communication about students' progress and parent attendance at school-sponsored activities.

Along similar trend of findings, researchers have found that the more active forms of parent involvement produce greater achievement benefits than the more passive ones. That is, if parents receive phone calls, read and sign written communications from the school, and perhaps attend and listen during parent-teacher conferences, greater achievement benefits accrue than when parents are not involved at all. In addition, considerably greater achievement benefits are noted also when parents attend and actively support school activities and when they help out in classrooms or on field trips, among others (Cotton and Wikelund, 2001). Research also shows that the earlier, in a child's educational process, parent involvement begins, the more powerful the effects will be. Educators frequently point out the

critical role of the home and family environment in determining children's school success, and it appears that the earlier this influence is harnessed, the greater the likelihood of higher student achievement. Early childhood education programmes with strong parent involvement components have amply demonstrated the effectiveness of this approach (Kreider, 2002; Starkey and Klein, 2000; Marcon, 1999; Miedel and Reynolds, 1999).

Some other researchers have emphasised the conduct of orientation and training for parents who wish to become more involved in their children's learning. These research studies which have compared parent involvement programmes that include orientation/training components with those that do not, indicate that providing orientation and training enhances the effectiveness of parent involvement. Research in this area indicates that parents generally want and need direction to participate with maximum effectiveness. Orientation/training takes many forms, from providing written directions with a send-home instructional packet, to providing "make-and-take" workshops where parents construct, see demonstrations of, and practice using instructional games; to programmes in which parents receive extensive training and ongoing supervision by school personnel. (Christenson and Sheridan, 2001; Hickman, Greenwood and Miller, 1995; Izzo, Weissberg, Kasprow and Fendrich, 1999; Trusty, 1999)

Among the researchers who claim that orientation/training activities for parents' involvement are beneficial, there are some who have looked at the extent of training, and have found that a little training is better than a lot. That is, programmes with extensive parent training components do not produce higher student achievement than those with only basic training, and they sometimes experience considerable attrition, presumably because the time and effort requirements of such trainings overtax the willingness of parents to stay involved. Researchers have also found that the schools with the most successful parent involvement programmes are those which offer a variety of ways in which parents can participate. Recognising that parents differ greatly in their willingness, ability, and available time for involvement in school activities, these schools provide a continuum of options for parent participation (Cotton and Wikeland, 2001).

There are other important ways parents are involved in their children's education. One of such is in school governance. The term "governance" here, according to Cotton and Wikeland (2001), includes any activity which provides

parents the opportunity to take part in decision making about school programmes. This may include being a school board member, a participant on a parent advisory committee or a local school improvement council, or an active member of the PTA. Areas in which parents may help to make programme decisions include goal setting, development and implementation of programme activities, assessment, personnel decisions, and funding allocations. These areas of parent involvement are some of the most controversial. Surveys show that most parents would like to play a more active role in these types of involvement, whereas most school administrators and teachers exhibit great reluctance to encourage parents to become partners in governance.

The literature reviewed (Chavkin and Williams, 1987; Edge, Strencky, McLoughlin and Edge, 1984) indicate that although administrators agree that parents should be involved with the schools in a variety of ways and that school personnel should spend time encouraging and training parents to become involved, they however, disapprove of parent involvement in administrative areas such as teacher and principal selection and evaluation. Administrators are also less enthusiastic than parents regarding the utility of parent participation in other activities such as the selection of texts and other teaching materials or setting priorities for the school budget. In addition, they tend to feel that parents do not have enough training to make school decisions, although surveys of parents indicate that the majority of them feel they are capable of making sound decisions (Chavkin and Williams, 1987).

In the reviewed literature on the subject of parents' involvements, no examples were found of programmes in which parent participation in decision-making roles could be directly linked to improved student achievement. The relationship between parent participation in decision making and student achievement is not as extensively researched as the effects of parent involvement in students' learning. Indeed, writers on the topic indicate that it is more difficult to assess the effects of parent involvement in decision making precisely because the connection to student outcomes is more indirect. Of the half-a-dozen documents which do address the connection between parent involvement in decision making and students' achievement, none offered evidence of a causal relationship, though some writers like Chavkin and Williams (1987) seem to believe that such a relationship exists.

The lack of evidence linking parent involvement in governance and student achievement should not be taken to mean that parents should not be included in some aspects of school decision making; however, researchers and scholars in the area, for

instance, Comer and Haynes (1991), have identified benefits other than students' achievement which have been found to emerge from involving parents in governance. These include:

- i. the elimination of mistaken assumptions parents and school may hold about one another's motives, attitudes, intentions and abilities;
- ii. the growth of parents' ability to serve as resources for the academic, social and psychological development of their children, with the potential for much longer term influence (because of continued interaction with their children over time);
- iii. the increase of parents' own skills and confidence, sometimes furthering their own education and upgrading their jobs, thus providing improved role models for their children; and
- iv. the increase in parents serving as advocates for the schools throughout the community.

Summing up the benefits of overall parents' involvement, Comer and Haynes (1991) indicate that the kinds of parent involvement, attending parent-teacher conferences and school functions, volunteering in classrooms, tutoring children at home, and so on and so forth provide the best training ground to help prepare parents for roles in school decision making. These scholars assert that activities as these enable parents to understand the school's structure and its instructional programmes, and provide basic experience in working with school personnel. These experiences can expand parents' knowledge and increase their credibility with school staff as they move into decision-making roles.

#### **2.4 Epstein's Six Types of Parental Involvement Framework**

Grolnick and Slowiaczek (1994) theorized three categories of parental involvement: behavioural, personal and intellectual. Parents' behavioural involvement such as visiting schools and participating in educational affairs provide information useful to the child's schooling. Parents' involvement is often characterised as personal when this involvement helps refine the affective characteristics of the child in general and create a positive attitude toward schooling and self in particular. Parents' intellectual involvement exposes the child to cognitively stimulating activities such as reading books, acquiring mathematics skills and discussing current events. All these three types of parental involvement, not just the intellectual component, have a

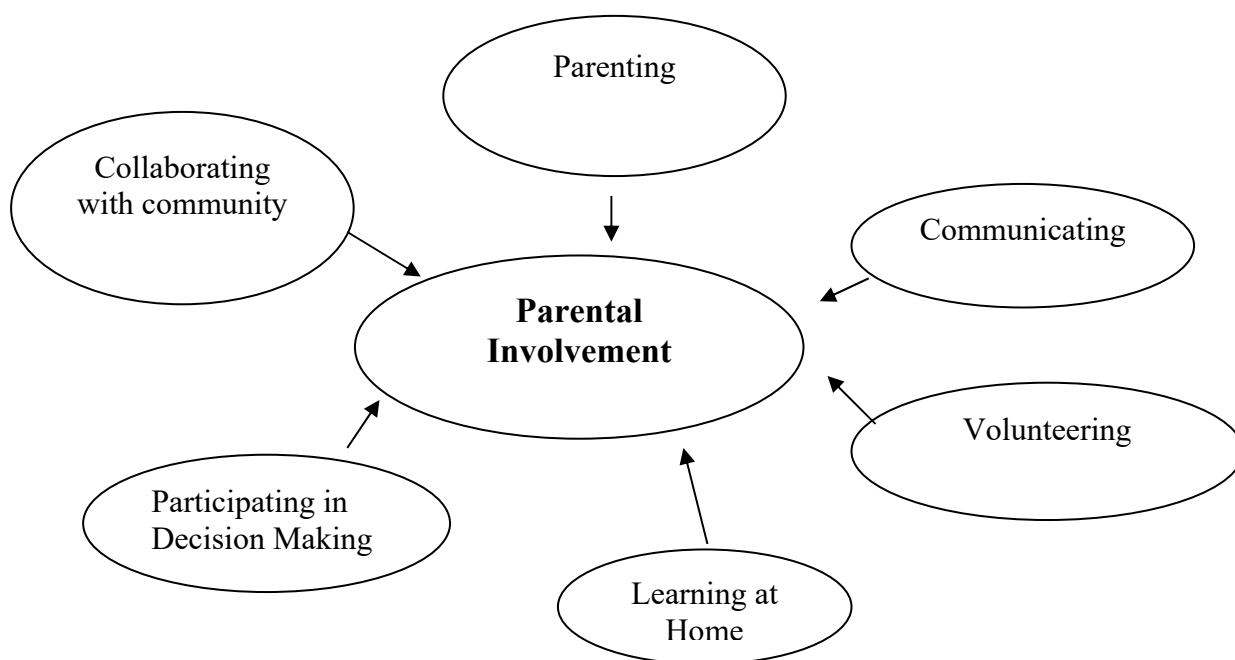
positive effect on children's school performance (Frempong and Ma, 2006).

Two models that focus this study are based on Bronfenbrenner's ecological model of development and Epstein's types of parental involvement in the provision of education. Epstein's (1995) types of parent involvement framework are appropriate for use in recognising the activities that parents are involved in with regards to their children's education.

Epstein developed a framework of six different types of parental involvement. This framework assists educators in developing school and family partnership programmes. "There are many reasons for developing school, family and community partnerships" she writes. The main reason for creating such partnerships is to help all youngsters succeed in school and in later life. She thus, defines six types of involvement, and lists sample practices or activities to describe the involvement fully. Her work also describes the challenges inherent in fostering each type of parent involvement. These involvements are: Parenting which refers to basic child rearing obligations for the child's health, safety, and preparedness for school and for providing positive home conditions that support educational progress.

Communicating refers to the basic obligations of schools to exchange information with families and families with school regarding school programmes and student's progress (such as communications through memos, notices, report cards, and conferences with parents). Volunteering involves works parents render at school without being paid or forced (such as assisting teachers, administrators, or students in classrooms) and in participating in school activities and events (such as students' performances in plays, sports, and other events). Learning at home refers to parental involvement in student's acquisition of knowledge at home, including parent-child-initiated requests for help, and teachers' ideas about parents' involvement in home learning activities.

Decision making refers to parental involvement in the process of making choices for school (such as participation in advisory councils, parent-teacher organisations, parent advocacy groups, and other school, district, or state level educational committees). Collaborating with community refers to school and parent working together with communities and other community agencies that enhance the learning opportunities of children (such as programmes for after-school care or health care, cultural events, and community services).



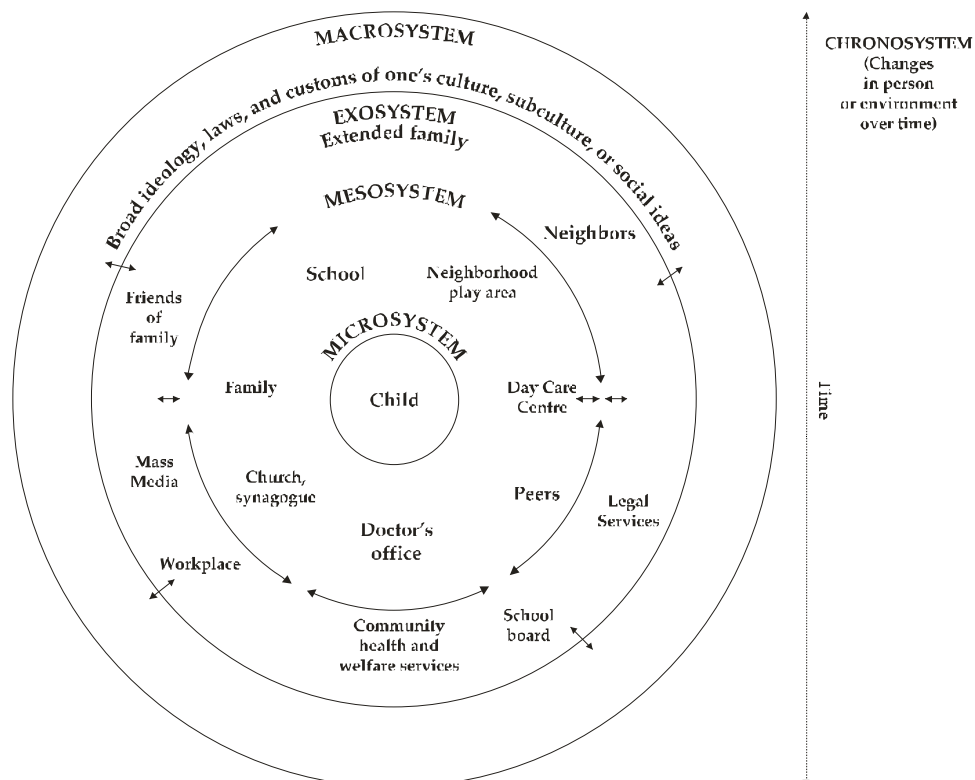
**Figure 1.2: Parental Involvement Model Adapted from Epstein’s (1995) Framework**

The Epstein framework conceptualises parents’ involvement in school and family-school connections from a social organisational perspective. This conceptualisation, according to Catsambis and Garland (1997), is based on a theory of overlapping spheres of influence which focuses on the complex interrelations of family, community, school and peer groups as they interact to affect students’ well being and academic achievement.

The significance of the theoretical perspective of overlapping spheres of influence lies not only in the identification of the different types of parental involvement, but also in the recognition that parents’ involvement in children’s education and family-school connections is not static, but is a complex phenomenon that is influenced by characteristics of the overlapping spheres of influence and the nature of the participants’ interrelationships. Parental involvement may, therefore, vary by factors such as students’ age and grade level, social background and experiences of families, and school policies (Epstein, 1992). This perspective points to the importance of expanding existing knowledge of how family involvement and students’ life change from the middle grades to high school. It also draws attention to the factors that influence any observe changes and effects of such changes on stuent’s’ progress.

## 2.5 Bronfenbrenner's Ecological Systems Theory

This theory states that human beings do not develop in isolation; the environments which surrounds them and with which they are on constant interaction with, play a major role in their development (Bridge, Judd and Moock; Bronfenbrenner in Huitt, 2003; Bronfenbrenner, 2004). Bronfenbrenner's model of the ecology of human development acknowledges that humans develop in relation to their family and home, school, community and society. Each of these ever-changing and multi-level environments as well as interactions among them, are key to development. This groundbreaking concept of the ecology of human development, however, views these environments, from the family to current society and the times, as nested settings in which a person develops over time throughout lifetime. 'Nested setting' explains a situation in which objects are fitted inside each successive larger ones ( see Figure 2.2).



**Figure 2.2 Bronfenbrenner's Ecological Model (adapted)**

**Source:** <http://www.emory.edu/EDUCATION/mfp/302/302bron.PDF> retrieved Nov., 2006

Bronfenbrenner created the ecological systems theory, which he renamed the Bioecological System theory fairly recently. The Bioecological System is the combination of the child's biological disposition and environmental forces coming together to shape the child's development. Bronfenbrenner says that there are two environmental conditions that are necessary for human development. The first is that one or more adults must love the child unconditionally; the second is that the adults must encourage the child and spend time doing joint activities with the child in and out of the home environment. Bronfenbrenner's theory can be understood if we think of a series of concentric circles, where the smallest circle in the centre of several other circles, is the child. The child, who contains various systems within him or herself, is at the centre of the nest, surrounded by other concentric circles, which contain individuals and groups of individuals in each layer. The child is the innermost egg that is nested within the other environments that are also nested within each other. Another way to describe Bronfenbrenner's theory is to think about it in terms of a rock being thrown into the water. The rock in the middle is the child and the ripple effects around that rock are the other nested environments.

The parents, teachers and anyone in a close relationship for a substantial amount of time with the child are in the first ripple. The first level of the ecology or the context of human development is the microsystem. This level has the most immediate and earliest influences on the child, and it includes the family, along with people in the local neighbourhood or community institutions such as the school, religious institutions and peer groups as well as the specific culture within which the family identifies.

The component of an infant's microsystems would be his/her parents and sibling(s), or caregivers of daycare for any infant attending that daycare. As a child grows to school age, their microsystems grow to include their daycare centre and elementary school because the child spends much of the day there. The important aspect of the microsystems is the direct contact and interaction with the child. No component is considered a microsystem in this theory if it is not in direct contact with the child for a substantial period of time.

The people in the microsystems have the most immediate effect on the child. At this level, relationships have impact in two directions - both away from the child and toward the child. For example, a child's parents may affect his beliefs and behaviour; however, the child also affects the behaviour and beliefs of the parent.



Bronfenbrenner calls these *bi-directional influences*, and he shows how they occur among all levels of environment. The interaction of structures within a layer and interactions of structures between layers is key to this theory. The key features of the bi-directional influences are when individuals and groups of individuals interact and directly affect others who exist within the same layer, as well as those who are in the layers on either side of them, for instance, interaction between child and father, child and mother and child and teacher. At the microsystem level, bi-directional influences are strongest and have the greatest impact on the child (Paquette and Ryan, 2006). It is what actually happens within settings like the family and the child care centre where a child is, that influence his or her development. In such settings, one may want to know what the child is actually doing and with whom rather than concentration on “risk factors” of children or the “social addresses” of their families. These risk and social addresses factors alone do not determine whether or not a child develops his potential. They can make it more difficult or less likely for a child to get the experiences he needs. It is the actual experiences that count, for example, is someone showing the child appropriate ways to behave? Does she have opportunities to draw and to climb? Does someone read with him regularly and interactively? (Paquette and Ryan, 2006)

The mesosystem, which is the next outer layer, consists of the "connections between children's immediate settings and surroundings. It encompasses connections between microsystems, such as home, school, neighbourhood, and child-care centre, that foster children's development"(Berk, 2000: p.28) This has an intermediate level of influences such as social institutions involved in such activities as transportation, entertainment, news organisations, and the like. The influence of these systems and institutions interacts with, and is filtered through the microsystem institutions.

The exosystem surrounds the mesosystem and refers to social settings that affect the child, such as the parent’s workplace or health services in the community but do not include the child. Again, using a child as our focus, we can say the exosystem does not cross the child's path directly but he does feel the positive or negative force involved with the interaction with his own system. Indirectly, an exosystem can have a huge effect on the child. For example, if a parent works for a company that does not have a flexible work schedule and the child is ill and needs attention, the parent may not be able to come home and take care of the child. The parent may need to ask a neighbour or someone who may not be as nurturing to take

care of the child. Also, this puts a lot of stress on the parent if a workplace is not flexible. The parent may not be able to spend as much quality time with the child as needed.

The outermost layer which envelopes the microsystem, mesosystem and exosystem is called the macrosystem. The effects of larger principles defined by the macrosystem have a cascading influence throughout the interactions of all other layers. The macrosystem consists of things that influence and sometimes support the child within the environment such as cultures, norms, and laws. This is the most removed influences such as international region or global changes or even more abstract aspects of culture. For example, the movement from the agricultural and industrial economies to an information-age, global economy is having widespread influence on the ways societies, communities, and families are operating. Another example is, if it is the belief of the culture that parents should be solely responsible for raising their children, that culture is less likely to provide resources to help parents. This, in turn, affects the structures in which the parents function. The parents' ability or inability to carry out that responsibility toward their child within the context of the child's microsystem is likewise affected.

The chronosystem involves the, "temporal changes in children's environment, which produce new conditions that affect development. These changes can be imposed externally or arise from within the organism (the child) since children select, modify, and create many of their own settings and experiences" (Berk, 2000: p. 30). These changes can take place on a daily or frequent basis. In a child's life, there will be events such as a death of a family member, a teacher's mid- year retirement or a change in the family structure that can change the conditions of that child's life. Bronfenbrenner (1998) believes these new conditions can affect a child's development. It is not just environmental types of changes that affect a child's development but the child can experience developmental changes due to internal changes. As stated earlier, "since children select, modify, and create many of their own settings and experiences...children are both products and producers of their own development" (Berk, 2000: p. 30).

What are the implications of this theory for teaching children and working with parents? Bronfenbrenner (1998) states that we must build bridges between home and school. Parents must realise that teachers cannot do all the work themselves and vice-versa. Teachers should help children learn to read and parents must help

reinforce that learning at home. Schools must get involved with community projects. That involvement can extend to the home by having children and their family members also contribute to the community. The extended family is also very important in the child's schooling. Teachers could invite members of the families e.g. grandparents into the classroom and have them tell stories about their culture so the children can feel proud of their heritage. Teachers and schools need to extend, to the working parents, as many options as possible to allow them to get involved in their child's education. This needs to happen because there are so many hurdles that working parents face, such as inflexible work schedules and limited sick leave; "time off work" may mean ends will not be met. Open communication with the parents as well as the student is imperative for the success of the child. One of the most important factors to keep in mind in the classroom while interacting with the children, according to Bronfenbrenner (1998), is to remember that everything said and done, not only to the child, but to the people, who have everyday contact and influence over that child, will affect the child's development. It may even change a child's development. By implication, the teacher should think hard about what they want to teach, say and do.

Although most of the emphasis in an ecological model is on these kinds of positive experiences called 'proximal' or near-processes – it also acknowledges the importance of protective and preventive processes – things that keep a child from physical and psychological harm. For example: Is the child protected from environmental toxins like lead and smoke? Within the child's home and child care settings, is the child receiving encouragement or discouragement?

Another important thing to know about this model is that it acknowledges that the number and quality of the connections between these settings also have important influences on a child's development. This includes relationships between the important adults in a child's life. For example, how often do the parents and the child's care provider talk? It also includes transitions the child makes between settings. For example, are the expectations similar in preschool and kindergarten, or are some children faced with entirely new ways of doing things when they reach elementary school? The three important points about an ecological model are that it is child-centered; it begins with a focus on the child's experiences because these are the "engines of development" and the nature of the relationships between different

settings are also included because they influence what the young children's experiences are.

## **2.6 Parental Involvement in the Provision of Basic Education and Policy Enactment**

Recent legislation in developed nations such as The Goals 2000: Educate America Act, has made parent involvement a priority for schools across the American nation. States in America have addressed this issue in a variety of ways including enacting parental rights legislation and encouraging parents to take a more active role in their children's education both at school and at home. Additionally, seventeen states direct all districts, boards of education or schools to implement parental involvement policies. They are Arizona, Arkansas, California, Florida, Georgia, Indiana, Louisiana, Michigan, Minnesota, Nebraska, Nevada, Ohio, South Carolina, Tennessee, Texas, Utah, Virginia. These following seventeen states have grant or award programmes to encourage or recognise schools or districts operating programmes involving parents in their child's education: Arkansas, California, Connecticut, Delaware, Florida, Indiana, Iowa, Louisiana, Michigan, Missouri, New York, Ohio, Rhode Island, South Dakota, Vermont, Virginia, West Virginia (Mississippi operates an award programme that recognises parents who become involved in school improvement efforts). Fifteen states encourage, urge, expect or direct employers to enable parents to attend school activities such as parent/teacher conferences. They are Alabama, California, Colorado, Hawaii, Illinois, Louisiana, Minnesota, North Carolina, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Utah, West Virginia. Realising the importance of parental involvement in USA, Carter (2002) reports that one of the eight goals included in the 1994, Goals 2000 legislation was dedicated to this critical area. It states that "every school will promote partnerships that will increase parental involvement and participation in promoting the social, emotional, and academic growth of children"(U.S Department of Education in Carter, 2002). This Act, a re-authorisation of the Elementary and Secondary Education Act (ESEA) encourages the nation's school districts, "to re-examine their parent involvement policies and programmes and to demonstrate innovative initiatives in order to obtain federal education funding" (Kessler-Sklar and Baker, 2000). As noted by these authors, one example is that eligibility for Title 1 money now requires the development of school-family compacts. The Title 1 programme is a government

mandated programme developed to increase parents' involvement and educational services for disadvantaged children. This programme placed the emphasis on parental involvement as the primary means of improving the quality of education of low income parent. In order for a district to receive money, at least, one percent of the money must be set aside for parent involvement programmes. In the survey of 200 school districts by Kessler-Sklar and Baker (2000), they find that the two most common parent involvement practices include: communicating with parents about their children's progress and school programmes, as well as providing parents with the opportunity to be decision makers regarding school policies and practices.

In California, the California's Family-School Partnership Act (1994) also allows parents, grandparents and guardians to take up to 40 hours off from work each year in order to be involved in their children's schools (Nakagawa in Wilkins, 2004). In Canada, the Canadian Council on Social Development (1997) has clearly recognised that the level of parent involvement in children's education is related to children's educational achievement (Frempong and Ma, 2006). As evidence of the importance of parental involvement in student achievement mounts, states in America have enacted legislation designed to increase parental involvement in the education process. Nearly all states have some form of parental involvement laws.

In addition to these policies, numerous states require parental involvement for early literacy programmes and for identified student subgroups such as at-risk students, students in need of remediation, and English language learners. While some listed policies reflect compliance with parental involvement provisions of the Elementary and Secondary Education Act, those provisions tend to merely supplement core commitments that states have demonstrated to involve parents in their students' education.

This researcher is not aware of any such acts or policy reforms in Nigeria that make involvement and the type mandatory for parents/guardians beside those enunciated in the National Policy on Education, which seems to be rather global and are not very specific on the type of involvement expected.

## **2.7 Parents' Involvement in the Provision of Basic Education in Nigeria**

In the Nigerian setting, the responsibility of raising a child is a collective one. According to Obanya (2002), in most parts of Africa, sociological parenting tends to serve as an overwhelming complement to primary biological parenting. Complementary sociological parenting is represented by the immense influence of the

extended family. It is also at play even when Africans from different places and cultures congregate in urban areas. The habit of caring for the other person is immediately recreated and is easily extended to caring for other's children.

As societies become more urbanised and technologically evolved, the nuclear family tends to become the norm in the act of parenting. The last years of the 20th century saw further evolution in the art of parenting like the emergence of working mothers through greater access of women to education and to paid employment; and the emergence of single parental families. These have posed such challenges as more intensive efforts by parents to fit into the competitive world of earning a living, learning new skills to be able to cope with the continuously changing demands of labour market; and possible erosion of traditional African sociological parenting.

Thus, in Nigeria, many parents do not have time for their children because of the economic down turn in the nation. Both fathers and mothers now engage in jobs and businesses unlike in the past, when the mothers did not have to work but stayed at home to take care of the children and see to their total welfare. The trend now is for working mothers to take their babies to school where there are day care facilities about six weeks after the birth of the babies. These children grow up to start schools there and while in schools many parents do not have much time to visit these children in schools to see what goes on there.

In the present day Nigeria, many parents are not involved in their children's schooling. It is a common sight in many African countries to see children of school age involved in hawking and street trading after schools and even during school periods. The result of this and many other factors lead to poor performance in school work, absenteeism, failure to do home works and assignments and misbehaviours in schools (Omoteso, 2010).

The involvement of parents in school matters is now usually through the Parent Teacher Association (PTA). The traditional role of the PTAs has been the making of financial contributions to schools. These contributions, are usually used for construction of some needed facilities and procuring some materials and equipment that may be lacking in the schools. The method for raising money for school-building projects is by levies and through voluntary donation. In some cases, money is also raised through donations by some parents in some town groups, clubs and associations. Private individuals and groups also voluntarily donate some school equipment and materials such as typewriters, duplicating machines, reams of paper

and games equipment for effective teaching and learning in the schools and providing the schools additional sums of money for running them. In addition, some also build classroom blocks or construct laboratory for schools.

The PTA employs some qualified teachers and pays them to teach children those subjects for which they have no regular teachers. Nowadays, some parents with requisite qualifications undertake to teach students, free of charge in their spare times, those subjects for which they have no regular teachers. Some parents and even whole communities have been known to make representations to the Local Inspector of Education, the School Board or Ministry of Education to cancel the transfer of some teachers who they feel are doing a good job in their local schools. Some of them have been known to lobby for the posting of some good teachers to their schools. A good number of PTAs have financed the construction of additional classroom blocks in order to decongest some overcrowded classrooms (Ejje, 2005).

## **2.8 Empirical Studies on Parent Involvement in the Provision of Basic Education**

Empirical studies have demonstrated that parent involvement significantly contributed, in a variety of ways, to improved student outcomes related to learning and success. These findings have remained reasonably consistent despite the fact that families have undergone various significant changes due to changes in time, and the different ways in which schools operate.

Epstein, Herrick and Coates (1996) have examined one Baltimore, middle school's effort to involve middle school students and their families in learning activities at home over the summer vacation. Results indicate that language skills scores at the end of the summer project are primarily explained by students' prior achievement, gender (female), and attendance. However, some students, especially those with marginal language skills, perform better in the fall if they had worked on activities included in the Summer Home Learning Packets. Overall, study results show that students of all abilities who work with a parent are more likely to complete packet activities than those who work alone.

The study by Faires, Nichols, and Rickelman (2000) of eight first-grade students reading below grade level to determine if parental training and involvement in the teaching of selected reading lessons would increase children's reading levels.

Parents in the experimental group receive training three times per week on selected parts of the Reading Recovery programme, which they implement with children at home during the five-week study. Parents of students in the control group do not have access to the programme. Informal assessments used by the teacher to evaluate reading levels indicate significant gains made by students in the experimental group.

Similarly, Balli, Demo, and Wedman (1998) designed a study to determine the effectiveness of a middle grade mathematics homework intervention in the Teachers Involve Parents in Schoolwork (TIPS) programme intended to increase family involvement in homework. Participants include 74 sixth-grade students and their families taught in three classes by the same teacher. In the first class, there are no homework involvement prompts; in the second class, students are prompted to involve family members in completing homework assignments; in the third class, students are prompted to involve family members and family participation is directly requested by the teacher. Families with students in the two classes that were prompted are significantly more involved in mathematics homework activities than those who are not prompted, although the level of family involvement did not predict students' achievement. Families of diverse educational levels report similar levels of involvement in their children's homework assignments, although feedback from participating family members indicate that parents with less education may need guidance from schools in order to help their children effectively. Family involvement was shown to be a continuum, with the amount and quality of help offered varying in degrees and effectiveness. The study also shows that two-parent families are more likely to help with homework than single-parent families.

In another experimental study, Van Voorhis (2001) in his quasi-experimental study of 253 diverse students participating in the Teachers Involve Parents in Schoolwork (TIPS) programme in a suburban middle school, compared interactive homework assignments with non-interactive assignments in terms of their effects on family involvement in homework, students' homework completion and accuracy, students' science achievement, and students' attitudes toward science. The study shows that well-designed, teacher-generated homework assignments in science can help students to practice skills, preparation for class and participation in learning activities. It can also help students to develop responsibility, while also promoting parent-child relationships and better parent-teacher communication. More than 80% of students in the interactive group said their families were sometimes, frequently, or



always involved in science homework assignments. By contrast, more than 80% of students in the non-interactive group said their families were never, rarely, or sometimes involved in science homework assignments over the 18 weeks of the study.

Epstein (2001) describes the successful TIPS interactive homework programme for middle school students that involves parents and students in learning activities at home with the focus on students. Applications to different subject areas are discussed, and guidelines are provided on how to develop a TIPS programme in any subject, including examples of homework. Studies of both the science and mathematics TIPS programmes indicate higher achievement for students involved in the interactive programme as opposed to peers who were not. In the language arts TIPS programme, students' writing skills increased with family involvement, and their language arts grades improved.

In another study, Sanders and Epstein (2000) report the results of interviews with 22 educators, parents, and students in two urban middle schools and two urban high schools that are members of the National Network of Partnership Schools. Respondents emphasised the importance of family participation in the education of students. Although they recognised that adolescents need more independence than elementary aged children, they also voiced the opinion that adolescents need the guidance and support of caring adults in the home, school, and community. Those who responded agreed that high school is a difficult time in students' educational careers and that support from significant adults can help students "successfully navigate this period." The respondents also agreed that communication and cooperation among home, school, and community increased students' opportunities to successfully transit to college or the workplace. Additionally, the study points out that professional educators and parents felt that their time to build relationships was limited. With the "right support, a framework of involvement, and a team approach," however, these respondents felt that parents, educators, and community members could build effective partnerships.

Halle, Kurtz, Costes and Mahoney (1997) who studied forty one (41) low-income African-American children and their caregivers found that parents' expectations for their children's future success in school and parents' perceptions of their children's academic skills are positively correlated with their children's

achievement scores. The study also shows that children who have more books at home read at a higher level than those with fewer books.

Keith and Lichtman (1994) utilised data from the National Educational Longitudinal Study of 1988 to measure the influence of parental involvement on the academic achievement of 1,714 eighth-grade Mexican-American students. The researchers developed and tested a “structural equation model” that considers and controls for diversity of family backgrounds and values, students’ previous achievements, and other factors. The study reveals that parental involvement did significantly influence children’s academic achievement.

Similarly, Lopez (2001a) included observations and in-depth interviews with four migrant families in the Texas Rio Grande Valley whose children had been identified by school personnel as highly successful in school by both academic and non-academic standards. The researcher found that these families perceived themselves as highly involved in their children’s educational lives, although they did not participate in their schooling in traditional ways. Although parents participating in the case study recognised traditional forms of involvement (attending PTA meetings, having parent-teacher contact, volunteering for school activities) as positive, they did not necessarily view these as important forms of involvement that would affect their children’s academic development. Lopez theorises that different types of parental involvement have the potential to impact on students’ achievement, especially in “marginalised” families. He recommends that schools should identify new ways to involve these parents in their children’s educational lives.

In another study, Lopez (2001b) describes how a Hispanic immigrant family’s perception of parental involvement differs from traditional American views of parental involvement. The Padillas parents exposed their children to their manual labour jobs, which simultaneously taught them “real life” lessons and demonstrated the value of an education in order to be qualified for better jobs. Lopez recommends that schools should make a greater effort to “effectively ‘partner’ with parents on the parents’ own terms,” to “identify the unique ways that marginalised parents are already involved in their children’s education, and search for creative ways to capitalise on these and other subjugated forms of involvement.” By adopting this strategy, schools will “recognise and validate the culture of the home” of their students.

In a similar study, Peng and Wright (1994) examine factors that explain why Asian-American students generally experience greater academic success than students who are members of other minority groups. Using data from the National Education Longitudinal Study of 1988, the authors conclude that home environmental and educational activities contribute significantly to the differences in achievement. Asian-American students are more likely than students of other minority groups to live in intact, two-parent families, to spend more time doing homework, and to participate in lessons outside of school. The study also indicates that Asian-American parents hold higher expectations for their children, although they do not spend more time than other parents in helping their children with homework.

Scribner, Young and Pedroza (1999) in Texas study three elementary, three middle, and two high schools that are designated as "high performing Hispanic" on the basis of: a) student populations being predominantly Hispanic; b) standardised test scores being "well above average"; and c) state and national recognition for being outstanding schools. Study methodology includes visits, interviews, observations, case studies, and data collection and analysis in several educational areas. In the area of parent involvement, results indicate that parents are primarily interested in assisting their children academically and socially and strengthening home-school relations. Volunteering for school activities was a secondary concern. Topics deemed of value to parents included enhancing the school environment by becoming involved; building and strengthening relationships with schools; showing concern for the development of their children; providing role models for their children; and deriving personal benefits such as meeting new friends, establishing neighbourhood networks, and becoming more informed.

Izzo, Weissberg, Kaspro and Fendrich's (1999) study claims to be one of the few studies that has assessed the relationship between parent involvement and school performance longitudinally, while also controlling for previous student achievement. Teachers reported on parents' involvement and school performance for 1,205 urban kindergarten to third grade students for three consecutive years. Parents' involvement was rated in four areas: frequency of parent-teacher contact, quality of parent-teacher interactions, participation in educational activities at home, and participation in school activities. Every parent variable studied, correlated moderately with school achievement, with participation in educational activities at home, predicting academic success significantly and more strongly than the other three variables. Researchers

found that the frequency of parent-teacher contacts, quality of parent-teacher interactions, and parent participation at school declined from the first year to the third year of the study.

In another study, Griffith (1996) analyses of school data on parent perceptions and various characteristics of 41 elementary schools in a large suburban school district located in a metropolitan area. The responses of 11,317 diverse parents who responded to a survey indicate that positive relationships of parental involvement to student achievement were largely unaffected by school characteristics or the socioeconomic, racial, and ethnic composition of the student population. Parental involvement is consistently correlated with students' performance when school resources and the composition of the school's student population are controlled.

Parental involvement (participating in volunteer activities and attending parent-teacher and school activities) and empowerment (parents' perception of schools' efforts to accommodate parent participation in school activities and to communicate with parents) contribute most significantly to students' performance.

Cooper, Lindsay and Nye (2000) studied 709 parents and four dimensions of parental involvement: autonomy support, direct involvement, provision of structure, and elimination of distractions. Survey results show that as parents' support for autonomy increases, the achievement of children also increases. The study also reveals that direct parent involvement showed the opposite relationship. Additionally, the study shows that parents provide more support for autonomy as children grew and homework assignments became more difficult. Implications of this study include a caution that teachers use care in requesting that parents provide active instruction to their children because outcomes may be affected by a combination of the family's economic, time, and skill resources. Researchers also advise teachers and parents to consider the ability levels of students before determining the roles their parents should play in homework. This study indicates that an active teaching role for parents may be most appropriate for elementary students experiencing difficulty in school. However, with older students doing well in school, parents should be encouraged not to interfere with self-study, but to reinforce autonomy so that students develop time-management and study skills that will enable them to become autonomous lifelong learners.

In general, the researchers concluded that parents' involvement improves students' outcomes throughout the elementary, middle school, and secondary years. Also, variations have been found according to students' family cultures, ethnicity,

and/or socioeconomic backgrounds. Parents' assistance with homework can be beneficial; however, parents may need guidance and assistance in order to work effectively with their children.

## **2.9 Parents' Involvement in the Provision of Education and Students' Achievement**

Literature on parent involvement and student achievement indicates that parents contribute to the education of their children in various ways. For example, effective parental behaviours include helping children with their homework, encouraging them to study, answering questions, offering guidance on educational decisions, having contact with the school and teachers, and attending school events (Fehrmann et al, 1987; Schneider and Coleman, 1993; Snow et al, 1991; Sui-Chu and Willms, 1996; U.S. Department of Education, 1987).

Other studies on parent-child conversations concerning school-related topics have shown that such conversations, contribute to educational success, and female children talk more with their parents about school matters than do males (Muller, 1993, 1998; Sui-Chu and Willms, 1996). However, previous analyses did not control for academic factors (e.g., grades, test scores, educational aspirations), and it is possible that parents talk more frequently with good students regardless of gender and females earn higher grades and are generally better students than are males. Further, the literature on gender socialisation suggests that females are taught to be more dependent and focused on others. They may, therefore, be more likely to engage in discussions with their parents, regardless of their academic standing (Carter and Wojtkiewicz 2000).

Analysing data from the 1996 National Household Education Survey that contrasts the involvement of fathers in two-parent and father-only families with mothers in two-parent and mother-only families, Nord (1998) comes up with interesting findings. Findings for K-12 students indicate that fathers can be a positive force in their children's education, and that when they are involved, children have a better chance to succeed in school. Students in two-parent families are more likely to get A, participate in extracurricular activities, enjoy school, and not fail a grade if their fathers are involved in school compared to students whose fathers are not involved, when factors such as mothers' involvement, fathers' and mothers' education, household income, and children's race/ethnicity are taken into account.

Children living in father-only households perform less well than children living in two-parent families. However, those living in father-only households also do better in school, are more likely to participate in extracurricular activities, enjoy school more, and are less likely to have been suspended or expelled if their fathers are involved in school compared with those whose fathers are not. The results, the author points out, should encourage fathers to become more involved and also encourage schools to welcome the involvement of fathers.

Parents' decisions and guidance on how adolescents spend their free time, and the importance placed on completing homework, are influenced by the level of family regulation. These factors have been shown to affect educational outcomes (Muller and Kerbow, 1993; Fehrmann et al, 1987). To examine this type of parental involvement, three measures of parental supervision are used: checking homework, limiting television watching, and limiting going out with friends. Research has further shown that parents supervise daughters more closely than they do sons (Block, 1983; Muller, 1998). This fits the notion that females are socialised to be dependent and obedient, while males are socialised to be independent and self-willed. It is possible that parents are more interactive with female children than males who do well in school and have high educational aspirations because these students appreciate and request for extra attention. Alternatively, parents might be more involved with those adolescents who are in trouble academically, or who have low aspirations, in an effort to improve their educational performance.

On the other hand, the findings may be interpreted as evidence of the persistence of traditional gender socialisation. That is, the greater involvement of parents with their daughters, compared with sons, may show that adolescent females are more dependent upon others than are adolescent males. Another possibility is that the findings may reveal a reciprocal relationship between daughters and their parents. Daughters might report greater parental involvement because they have more positive experiences with parents, whereas adolescents might be less inclined to report parental involvement if the activities were negative, critical, or punitive (Felson and Zielinski, 1989). In addition, if adolescent females are more obedient and cooperative than are adolescent males, that might influence the nature of the parental involvement and affect students' responses.

Epstein's typology of parent involvement is adapted in this work as a framework to organise the findings on the issue of parent involvement and student

achievement. Epstein's typology and terminology are predominant throughout the middle level research and findings in respect of these are hereby discussed.

In respect of parenting practices at home, findings seem to suggest that there is a relationship between student-reported rules and increases in reading achievement (Desimone, 1999). Parent-reported rules predicted a decrease in students' achievement among non-minority students, which some researchers believe reflects parents' attempts to help the child when the child is having difficulty. If this is the case, perhaps more proactive parent involvement would avoid a decrease in achievement scores. However, this approach may be tempered by the differences in parental ability (e.g. parent education level) and available resources such as time (Muller, 1995), to help their children. This would account for the differences in achievement results when parents' education is considered. In order to address this, perhaps identifying alternative middle level educational support systems perceived as positive by adolescents might be considered. Parent involvement programmes that use parents' and students' self-reports as a way to determine the level of parent involvement and its effects should be aware that students' reports (i.e., students' perceptions) are better predictors of students' outcomes than parents' reports (Desimone, 1999).

In a study of a parent involvement programme, Epstein, Simon and Salinas (1997) report that families of middle grades students could be involved in learning activities at home. Their study of the TIPS-Language Arts programme documents that with interactive homework designed by teachers and conducted by students, most families in inner-city middle schools are informed about and involved in their children's education on a regular schedule. The programme includes parents who would not otherwise have become involved.

With respect to communicating between school and home, research suggests that the association between school-home communication and students' achievement was relatively small (Sui-Chu and Willms, 1996). It also suggests that outcomes vary to some degree by race and whether the desired outcomes are standardised scores or students' grades. Grades are slightly more impacted than achievement test scores (Desimone, 1999), which may be the result of parent(s) communicating with the school and/or teacher at the time grades are impacted. McNeal (1999) indicates that because school-home communication and levels of parent involvement vary by race and income level, this suggests that some groups may feel more comfortable

communicating with the school than others. This implies that parent involvement programmes should develop positive communication strategies unique to the context of their own community. Parent involvement programmes that review and adapt effective strategies used by schools with similar family and community background characteristics might be beneficial.

The association between volunteering or being an audience and fundraising, and student achievement appears to vary by race and family income. Volunteering was almost twice as predictive of grades as achievement test scores (Desimone, 1999). While the reasons are not clear, the findings suggest that there is a small overall relationship between this component of parent involvement and student scores (Sui-Chu and Willms, 1996). However, volunteering or fundraising on the part of white and middle-income parents is associated with increases in mathematics and reading scores but is not significant for African-American, Hispanic, Asian, and low-income students (Desimone, 1999).

Involvement of parents with students' learning activities at home is an area where findings are still very inclusive. Referring to studies by Muller, and Schneider and Coleman, Desimone (1998) concludes that school-level involvement has less effect on achievement than parent-child involvement. The findings show that parent-child discussion is significantly related to increased achievement for whites and African-Americans; however, the link is not significant for Hispanics or Asians (McNeal, 1999). Sui-Chu and Willms (1996) find that home discussion of school activities is one of the stronger predictors of students' achievement (Balli, Demo and Wedman, 1998). Although the dynamics of parent-child discussion about school are not clearly understood, studies suggest that parent-child discussion focusing on middle level age students is another area where parent involvement programmes might make a difference.

As revealed in the study carried out by Wang and Wildman (1995), parents' involvement in terms of helping their children with or supervising their home work has a negative relationship with achievement. Some researchers believe this is an intervention strategy or a negative outcome of parental monitoring of an adolescent seeking his or her own independence. The findings suggest that perhaps a more proactive parent stance might prevent problems before they occur. Providing alternative school-based strategies for assisting adolescents with their homework in ways they find acceptable might be considered. The negative relationship may simply



be due to parents who are trying to help students who need help. Based upon initial findings from parent involvement programmes, students' academic work and attitudes improve when students conduct interactive homework with family members (Epstein, Simon, and Salinas, 1997).

Decision making, governance, and advocacy roles are other ways parents can be involved. Parent involvement research studies, have tended to distinguish between Parent-Teacher Organisation (P.T.O.) attendance and P.T.O. involvement, which suggests some degree of responsibility and participation in decision making. P.T.O. attendance or parent volunteering is associated with very small effects on reading and mathematics achievement (Sui-Chu and Willms, 1996). P.T.O. involvement findings vary to some degree by subject matter tested, income level, and race. Although the effect of parent P.T.O. attendance and involvement is not clearly understood, it has been suggested that P.T.O. involvement may mitigate some of the negative effects related to racial/ethnic barriers and differences by providing opportunities for governance and advocacy roles (Desimone, 1999). Parent involvement programmes that encourage and support involvement of low-income parents in parent/school organisations may provide better insight about the value of such involvement.

### **Family Socio-Demographic Factors and Academic Achievement in English language**

Family socio-demographic factors are the factors that affect the growth and development of a child within and between the different environments of the family. For this study these factors include parents' education, parents' occupation, parents' income, family size, number of children and marital structure, child's gender and parental educational expectation for their children. These factors have all been implicated as bearing on educational achievement (Frempong and Ma, 2006; Sy and Schulenberg, 2005; Mullis, Rathage and Mullis, 2003; Amato, 2001; Sun and Li, 2001; Carter, 2000; Hanson, McLanahan and Thomson, 1998; Astone and McLanahan, 1991).

There is the general belief that when parents are educated, they seem to know the value of education. Having benefited from it themselves, they would want their wards to receive same. Parental education has many correlates that may influence investments in children's human capital, and controlling for these effects may better identify the true effect of parental education. For example, more educated parents may

face less severe resource constraints; failing to control for household wealth may thus bias the estimated effect of parental education upward. Similarly, parental education may influence the decision to invest in children's human capital in response to either high or low teacher quality and school quality. According to research, more educated parents allocate higher levels of both goods and time to their children's human capital production, even controlling for wealth, teacher quality and child cognitive development (Brown, 2006).

The reasons that parental education has such a pronounced effect on child learning are not very well understood. One explanation that is often posited is that more educated parents make greater investments in children's human capital (Strauss and Thomas, 1995) by providing higher levels of goods and services that complement learning and by devoting more time to their children. However, more educated parents in poor households without access to credit may face a trade-off between providing more goods and allocating more time for interacting with their children. Specifically, more educated parents may receive higher wages and thus may have a higher opportunity cost of time spent outside the workplace. Such parents may forgo some time spent interacting with children to spend more time working and may make greater investments in goods for their children's human capital production as a result.

Brown (2006) suggests that parents that are more educated expect higher returns to education for their children, offering one reason why parents in resource-constrained households make greater investments in both goods and time. It is also found that the effect of mother's and father's education differs, with a marginal year of mother's education having a larger impact on time investments than a marginal year of father's education. Alternatively, parental education may increase the efficiency or effectiveness of the time spent interacting with children, and more educated parents may thus forgo some time spent working in order to make greater time investments in their children's human capital. However, if the returns to education are higher for the children of more educated parents or if parental education positively influences parental preferences for children's education, then more educated parents may make greater investments in both goods and time, even in poor households. Unfortunately, in the absence of very restrictive assumptions about the functional form of the human capital production function and about the degree of substitutability of goods and time in human capital production, theory has little to say about the effect of parental education on investments in children's human capital.

Other studies by Sathar and Lloyd (1994) investigate the impact of parental education on educational expenditures using survey data from Pakistan. They find that household spending on children's education is up to 75% higher if mothers ever attended school relative to households wherein mothers did not. Similarly, Behrman, Andrew, Mark, and Prem (1999) analyse how mother's education affects parental time allocation using household data from India. Controlling for workforce participation, they found that literate mothers spend more time than illiterate mothers on total time allocated to home care, defined as caring for children and performing household chores. These results suggest that more educated parents may make greater investments in both goods and time.

According to Brown (2006), a child's cognitive development may also affect the optimal household allocation because more educated parents may invest more in very gifted children or may help less gifted children by providing greater investments in their education. Studies such as those of Robinson (1985) and Hofferth (1999) are in support of this view as they reveal that more educated mothers are more likely to overstate time engaged in socially desirable activities such as reading to children. Considering the dramatic increase in the return to education over the last few decades, which suggests that family income has been improved, on average, for the more educated parents, test scores from children from such families with more educated parents have been found to have improved relative to those from families with less educated parents (Dahl and Lochner, 2005).

Several studies during the past decade have examined the relationship between student outcomes and family factors such as socioeconomic structure (SES), culture and ethnicity. Parents' income is a well known indicator of SES by social scientists and it is one of the three equally weighted, standardised SES components. The two other components are parent's education and parent's occupation. These three components are recognised by the National Center for Educational Statistics (NCES) (2004). The question of the effect of parental resources on the academic performance of children and adolescents has received recent attention by scholars such as Blau (1999), Feinstein and Symons (1999), and Ermisch and Francesconi (2001). The general observation is that adolescents from poor families are more likely to leave school at the time education ceases to be compulsory, and they are less likely to participate in university education. In addition, household financial constraints would influence the cost of obtaining education. Similarly, other researches have indicated

that socioeconomic structure (SES) is the best predictor of academic achievement and that low-SES forecasts low achievement (Caldwell and Ginther, 1996; Hobbs, 1990). In these cited studies, SES is characterised by the economic, social, and physical environments in which individuals live and work, as well as by demographic factors. Shaver and Walls' (1998) study of Title 1 students shows that outcomes in mathematics and reading achievement for students of all socioeconomic levels are significantly affected by parent/family involvement, although students from higher socioeconomic families experience the greatest improvement. Desimone's (1999) study reveals that the effectiveness of particular parent-involvement practices does differ according to race/ethnicity and family income. This author recommends that these differences, be considered by educators and policy makers if parent involvement is to be utilised as a resource to help schools respond more effectively to the nation's growing income and educational disparities. In contrast, researchers such as Griffith (1996) and Kellaghan, Sloane, Alvarez, and Bloom (1993) report that student outcomes are largely unaffected by these factors.

Researchers have provided several explanations for why family income might affect child development. However, the major challenge faced by these researchers attempting to estimate the causal effect of family income on children's outcomes, however, has been the endogeneity of income. In particular, children growing up in poor families are likely to have adverse home environments or face other challenges which would continue to affect their development even if family income were to increase substantially. A growing empirical literature questions how poverty affects a child's well-being and whether income support programmes can improve children's life chances. However, evidence on the extent to which family income affects child development is mixed. Previous studies differ in data, methods, and findings, as discussed in the collection of studies in Brooks-Gunn and Duncan (1997) or the surveys by Mayer (1997) and Haveman and Wolfe (1995). As a result of these concerns, there is no consensus from literature on whether family income has a causal effect on child development (Duncan and Brooks-Gunn, 1997; Mayer, 1997; Haveman and Wolfe, 1995).

First, poverty is associated with increased levels of parental stress, depression, and poor health – conditions which might adversely affect parents' ability to nurture their children. For example, in 1998, 27% of kindergarteners living in poverty had a parent at risk for depression, compared to 14% for other kindergarteners (Child

Trends and Center for Child Health Research, 2004). Low income parents also report a higher level of frustration and aggravation with their children, and these children are more likely to have poor verbal development and exhibit higher levels of distractibility and hostility in the classroom (Parker et al, 1999). Extra family income might also matter if parents use the money for child-centred goods like books, for quality daycare or preschool programmes, for better dependent health care, or to move to a better neighbourhood. Until recently, empirical studies linking poverty and income to child outcomes have done little to eliminate biases caused by the omission of unobserved family and child characteristics. Most studies employ regressions of an outcome variable (such as scholastic achievement) on some measure of family income and a set of observable family, child, and neighbourhood characteristics. In view of this, Dahl and Lochner (2005) observe that children living in poor families may have a worse home environment or other characteristics that the researcher does not observe. These omitted variables they contend, may be part of the reasons for substandard achievement and may continue to affect children's development, even if family income were to rise. While these studies reveal the correlations between income and child outcomes, they do not necessarily estimate a causal relationship as Mayer (1997), Brooks-Gunn and Duncan (1997), and others have pointed out.

Blau (1999), Levy and Duncan (1999) and Duncan et al (1998) use fixed effects estimation strategies to eliminate biases caused by permanent family or child characteristics. All three studies use differences in family income levels across siblings to remove fixed family factors when estimating the impacts of income on child outcomes. Using Panel Study of Income Dynamics (PSID) data, both Duncan, et al (1998) and Levy and Duncan (1999) find that family income at early ages is more important for determining educational attainment whether they control for fixed family effects or not. In another study, using data from the Children of the National Longitudinal Survey of Youth (NLSY), Blau (1999) reaches somewhat different conclusions. When controlling for "grandparent fixed effects" – comparing the children of sisters – he finds larger impacts for "permanent income" than when running standard Ordinary Least Squares (OLS) regressions. On the other hand, he finds smaller and insignificant effects of current family income on ability and behavioural outcomes when he uses fixed effect strategies (regardless of whether he uses comparisons of cousins, siblings, or repeated observations for the same individual). While these works represent a significant step forward, they do not

control for endogenous transitory shocks and they may suffer from severe attenuation bias.

Duncan et al (2004) combine data from four studies that focus on programme impacts experiments in an attempt to separately estimate the effect of family income versus employment and welfare effects induced by the programmes. They find a relatively large effect of family income on school achievement for preschool children but not older children. The Dahl and Lochner (2005) study also confirms that current income has significant effects on a child's mathematics and reading test scores. Their estimates imply that a \$1,000 increase in income raises mathematics test scores by 2.1% and reading test scores by 3.6% of a standard deviation. The results are even stronger when looking at children in families most likely to be affected by the large changes in the Earned Income Tax Credit (EITC), and are robust to a variety of specifications, in addition to the inclusion of maternal labour supply. They also find some evidence of interesting dynamic relationships between past income and current outcomes, although they are limited in the dynamics they can incorporate. Finally, they uncover evidence consistent with the hypothesis that families are forward-looking and that expectations about future income affect child outcomes.

Research evidence has indicated that low income parents have fewer children's books in their homes and spend less time reading to their children, indices which are negatively associated with future academic performance. Children in poor families are also less likely to receive adequate health care and nutrition, both of which might affect performance in school. Finally, neighbourhood poverty has been associated with underfunded public schools and lower achievement scores among young children (Child Trends and Centre for Child Health Research, 2004). In an earlier study, Kooreman and Kapteyn (1987) use U.S. time-diary data from the 1975-1981 Time Use Longitudinal Panel on married couples to estimate models of time spent on child care and other activities. They find that higher wages for fathers increase care provided by mothers, that mothers' provision of care does not respond to changes in their own wages, and that fathers' provision of care does not respond to changes in either's wages.

Changes in family size affect resources and needs. An added child increases the household's need for care. Downey (1995) bases his research of educational performance on a resource-dilution model, which assumes a direct relationship between intelligence and parental resources. Downey (1995) finds that parental

resources (or the lack thereof) explain the inverse relationship between family size and educational performance. Haecker (2006) supports the resource-dilution model and its prediction that as the number of children increases, the proportion of parental resources for each child decreases, thus decreasing the potential for higher learning and intelligence.

The introduction of this model has instigated more research on the effects of social and environmental effects on intelligence and cognitive abilities of students. Numerous studies have shown an inverse relationship between family size and IQ, while a significant negative correlation was found between family size and GPA (Marjoribanks, 1976). More specifically, Vonderheide (1978) has found that subjects with four or less siblings have a higher GPA than subjects with four or more siblings. Sex composition of the family has an effect on these abilities as well. Based on data from standardised tests showing that males perform better than females overall, the model implies that children with more brothers have an intellectual advantage over children with more sisters. Powell and Steelman (1990), however, do not find a significant difference between mathematics and verbal components in relation to the number of brothers versus the number of sisters. In the same study, though, it is found that, concerning academic performance, an additional brother significantly lowers student's GPA, while an additional sister has only a slight influence.

In the Haecker (2006) study, it is observed that the total number of siblings does not have a significant effect on verbal and spatial task performance. This is inconsistent with previous research. Nonetheless, on the different tasks, participants with a greater number of siblings score higher than participants with fewer siblings. Participants with more brothers have higher scores on the verbal task but produce lower scores on the spatial task than participants with more sisters or an equal number of brothers and sisters. These results are inconsistent with the initial hypothesis that participants with more sisters will have higher verbal scores, and participants with more brothers will have higher spatial scores. On the contrary, the resource-dilution model, however, does not seem to support these findings, as it predicts an inverse relationship between sibling size and task performance. These results are also inconsistent with those of Vonderheide (1978), who discovers that participants with four or less siblings have a higher GPA than subjects with four or more siblings.

In their study, Powell and Steelman (1990) compare relative number of brothers and sisters on task performance, (verbal and spatial task performance). When

an additional brother is added, the GPA is lowered significantly, although an additional sister has little or no effect on academic performance. Participants with more brothers have higher scores on the verbal task but produce lower scores on the spatial task than participants with more sisters or an equal number of brothers and sisters. These results are inconsistent with the initial hypothesis that participants with more sisters will have higher verbal scores, and participants with more brothers will have higher spatial scores.

Reasons for this nature of findings, according to Haecker (2006), may have been due to the small variability observed, especially in the data on parenting style. Out of the 47 participants used by the scholar, 33 are raised by both parents, 10 are raised by a single mother and 2 are raised by a single father. Small variability is evident in the data on total number of siblings as well, in that over half of the participants have 1-2 siblings. He, therefore, believes that a larger and more variable sample size may have produced more proportional and significant data.

Marital structure remains an important area of investigation for researchers and practitioners who work with adolescents because, unlike other indicators of academic achievement, adolescents have little or no control over the parental structure in which they are raised. Jeynes (2005) reports that marital structure is the single greatest predictor of academic achievement, although parents who discuss school issues and attend school functions also contribute to the academic success of students.

One important area of a child's life that is dramatically impacted by marital structure is education. Studies on children reared in single-parent families have consistently indicated its negative effects on a child's school achievement, completion, behaviour, and social development (Pong and Ju, 2000; Pong, 1998; Downey, 1994; McLanahan and Sandefur, 1994; Featherstone and Cudnick, 1992; Amato and Keith, 1991; Astone and McLanahan, 1991). Slightly more than one-half of all marriages in the United States end in divorce, and millions of children every year enter a new category of family structure – the single parent family. In 1970, 12% of all children in the US lived in single-parent homes; by the year 2000, that number rose to just over 30% (U.S. Census Bureau, 2000). Such a shift in family demographics has a direct influence on the life of children. This scenario, though not as prevalent in the Nigerian context, is gradually gaining ground nonetheless, and the need to study this trend is important.



The question, then, of whether children fare better in homes with single parents or both parents becomes an important issue for researchers in the areas of adolescent development and education. Videon (2005) states that previous researchers have overlooked the possibilities that families headed by single-parents might impact on their sons' or daughters' academic achievement differently. This view has given the impetus for the increased research in the area. However, a substantial amount of literature has suggested that children from intact families outperform their counterparts from single-parent families on typical academic achievement measures such as grades, standardised test scores, and teacher evaluations. (Ham, 2004; Pong and Ju, 2000; Pong, 1998; McLanahan and Sandefur, 1994; Featherstone and Cudnick, 1992; Amato and Keith, 1991).

Although the educational difficulties of children from single-mother families are well documented, much less is known about academic development of children from single father families. One reason may have been due to Downey's (1994) observation that nearly all of previous researchers, however, have combined single-mother and single-father families into the one category of single parent families without delineating whether the family is headed by a single mother or single father. However, early research on the question of achievement of children in single-father homes by Featherman and Hauser (1978) indicates that the academic achievement of children who grow up in single-father families is lower than that of children who grow up in single-mother families. In contrast, Mulkey, Crain and Harrington (1992) report that children in single-mother homes have scored lower on academic achievement than children in single-father homes.

Studies on achievement, parenting, and education reveal many explanations for the achievement differences of children in single-parent homes as against those in intact families. Although a mother's role is more important than a father's in explaining some of their children's psychosocial characteristics such as antisocial behaviour (Stolz, Barber, and Olsen, 2005) and social competence (Grolnick and Slowiaczek, 1994), recent studies show that a father's role is important in explaining cognitive development (Biller and Kimpton, 1997) and youth social initiative (Stolz et al, 2005). Fagan and Iglesias (1999) report that children from families with actively involved fathers have higher mathematics scores than their counterparts from families with less involved fathers.

Few will argue about the positive effects of parental involvement in their children's education. Parental involvement in school boosts the natural talents of students (Bacete and Rodriguez, 2004), improves school behaviour (Minke and Anderson, 2005), and increases achievement in adolescents (Spera, 2005). For example, parental involvement in school improves mathematics achievement when prior knowledge is held constant (Sheldon and Epstein, 2005). Moreover, student achievement and aspirations are associated with increases in parent involvement (Hong and Ho, 2005), and parents become more involved when they believe that their involvement is an expectation of their children or their children's teachers (Deslandes and Bertrand, 2005).

Examining married parents from the same survey, Nock and Kingston (1988) regress aggregate time with children and time spent in particular care activities against measures of mothers' and fathers' work schedules, reporting that mothers' employment, especially employment during after-school hours, decreases the time they spend with their children. However, the effects on children are partially mitigated because the reductions are concentrated in secondary activities with children and not in child and baby care *per se*. There is little evidence that fathers compensate by increasing their direct care activities or substituting among activities.

Bryant and Zick (1996) use a larger U.S. sample of two-parent, two-child families and estimate instrumental variable models that attempt to account for the endogeneity of mothers' employment. They also find that the hours that mothers spend in market labour reduce the time that they devote to child care; however, this effect appears mainly for older children. Like Nock and Kingston, they find little evidence that fathers compensate with more child-care time of their own. Finally, Hallberg and Klevmarken (2003) use Swedish data on dual-earner, married and cohabiting couples to investigate the determinants of child-care, instrumenting for the parents' wages, the parents' market time, and the children's time spent in external care. They find that the time a spouse spends in child-care has a positive impact on own time spent in child-care, that neither own nor spousal wages affect child-care time, that own hours worked has a negative effect on own time spent in child care, and that spousal hours worked has a positive effect.

Few of these studies which focus on couple households compare couple and single-parent households. One such study is Sandberg and Hofferth (2001) which examines time spent with children and finds that single-parent households spend

substantially less time with children. Another study is that of Kalenkoski, Ribar, and Stratton (2006) who use British data to jointly examine primary and secondary child care time as well as time in secular work. They find that married parents allocate their time similarly while single parents spend more time on child care and less time in secular work.

The findings reveal that married parents spend significantly less time in primary child care on weekdays and weekends than their single counterparts. This is also true for cohabiting men on weekdays. With respect to passive child care, married mothers spend less time than their single counterparts on the weekend while married fathers spend less passive care time on the weekdays. Cohabiting mothers also spend less time in passive care on the weekend than single mothers. These differences in results between married (and sometimes cohabiting) and single parents may reflect the ability of two-parent households to substitute each other's time in child care. With respect to market work time, married women spend less time in market work on all days while cohabiting women spend less time in market work on weekdays than single women, perhaps reflecting specialisation in two-parent households. Living arrangements have no significant effect on the time fathers spend in market work.

Arguments in favour of children of single parents being raised by their same-gender parent (e.g., daughter with mother and son with father) lie in beliefs about gender role socialisation and psychodynamic factors associated with developmental changes in boys and girls that are better understood by the same-gender parents (Lamb, 1981; Thompson, 1983). Social learning theory posits the view that children learn gendered behaviour from observing and modeling the thoughts and actions of the same-gender parent (Rossi, 1984). Children form schemas of gender appropriate behaviour from their parents, and the argument follows that, without needed role models (e.g., the absence of one of the parents), children will suffer a deficit in learning what it is to be a boy or girl (Bozett, 1985). The overall message is that children receive a greater influence from their same-gender parent (Bowlby, 1988; Heatherington, 1981).

According to psychodynamic theory, the resolution of the innate struggle for gender identification is crucial to the successful development of gender appropriate urges and behaviour so that the boy is not overly feminine and the girl not overly masculine (Juni, Rahamim and Brannon, 1985). Consequently, Psychodynamic theories posit a similar rationale for the importance of matched-gender single parents

and children (Freud, 1949). According to psychodynamic theory, children identify with the same-gender parent and conversely disidentify with the cross-gender parent.

Santrock and Warshak (1979) and Peterson and Zill (1986) report that children who live with cross-gender parents exhibit more behavioural problems than their peers living with same-gender parents. Also Radin and Russell (1983) contend that living with a cross-gender parent hurts academic performance. However, these studies have major methodological limitations (i.e., small and non-random sample) and have fallen out of favour with contemporary thought on gender and parenting. Powell and Downey (1997) use a national database to investigate the matched gender hypothesis, and find that there are no significant differences on the following variables: view of self, relationships with others, school outcomes, parental involvement, and deviance. In fact, the results of Powell and Downey's study contradict earlier studies such as Peterson and Zill (1986); Radin and Russell, (1983); Santrock and Warshak (1979), that are based on the aforementioned major psychological theories.

On the one hand, the evidence regarding adolescent educational aspirations, experiences, and attainments suggests that gender role socialisation has detrimental effects for females. Thus, most of the evidence suggests that differential gender socialisation is detrimental to females; however, its severity is unclear, given the recent increase in gender equality in educational attainment.

Studies by Keith, Keith, Quirk, Sperduto, Santillo and Killings (1998) and Shaver and Walls (1998) investigate the effect of student's gender on parent/family involvement and indicate no significant difference in parent/family involvement between boys and girls who are participants in the study.

Lee, Kushner and Cho (2007) use a national database to examine the effects of parents' gender, children's gender, and parental involvement in school on multiple indices of students' academic achievement in single-parent families. First, the results of the study indicate that there are no significant differences in academic achievement between adolescents who live in single-father households and adolescents who live in single-mother households. The findings of the study are thus not consistent with earlier studies (Featherman and Hauser, 1978; Mulkey et al, 1992). Although Featherman and Hauser (1978) report that children who live with single mothers have higher scores on academic achievement, Mulkey et al. (1992) report that children who lived with single fathers score higher on academic achievement.

Second, the results of the study (interaction effect between parent gender and child gender) indicate that there are no significant differences on academic achievement between adolescents who live with the same-gender parent and adolescents who live with the cross-gender parent. This result contradicts the theoretical basis for the benefits of the matched-gender parent argument proposed by psychodynamic and social learning theory, but, it supports Powell and Downey's (1997) study, which also shows no evidence of a matched-gender advantage. They use a 1980s national database in their study and conclude that single fathers can be role models to girls and to boys, just as mothers can be role models to boys and to girls.

Third, the results of the study indicate that there are no significant differences between adolescents who live with highly involved single parents and adolescents who live with less involved single parents. This finding contradicts the results from the National Center for Education Statistics (1997) study that children in the 6<sup>th</sup> through 12<sup>th</sup> grade who live in single-parent families are more likely to get mostly "A's" if their parents are involved in their school activities.

Finally, the results of the study indicate that parent gender and child gender interact with parental involvement in school to affect adolescents' academic achievement differentially. Although sons who lived with single fathers, sons who lived with single mothers, and daughters who live with single mothers receive the same or lower academic achievement score regardless of whether the parental involvement level was low or high, only daughters who live with single fathers receive higher academic achievement scores when single fathers are involved more in their school activities. That is, the daughters who live with highly involved single-fathers had higher scores than any other group on the four academic achievement variables (reading test, mathematics test, English teacher's evaluation, and mathematics teacher's evaluation) which Lee, Kushner and Cho (2007) studied.

Why do the daughters who live with highly involved single-fathers fare better than other groups on academic achievement? Tentative explanations for these results suggest that when children and adolescents view their parents in a friend role, parental authority is compromised by becoming either overly identified with the same-gender parent or too disengaged with the cross-gender parent, as suggested by the literature on gender identity development (Arditti, 1999). The findings suggest that students benefit from exposure to cross-gender perspectives. Children require certain boundaries from parents in order to distinguish their parents from friends or

acquaintances. Past research indicates that fathers are less inclined to become friends with their daughters in the way they are with sons because they report discomfort with issues concerning the onset of secondary sexual characteristics during adolescence (Kalman, 2003). Fathers are more comfortable with sons because they are better able to identify with the onset of male adolescence from their own experience (Downey and Powell, 1993). The parental-modeling effect caused by the cross-gender distance may offer an explanation as to why daughters who live with highly involved single-fathers perform better in the investigated academic achievement measures, i.e., the fathers may exhibit simultaneously the characteristics of parent and coach as opposed to a friend and confidant. Naturally, there are exceptions; however, the results persist even when all other relevant variables of explanation are held constant. Fathers, then, might not likely be able to identify with daughters in terms of their social and interpersonal concerns in the ways that mothers might. The focus for fathers is more task-oriented or concrete, whereas for mothers the focus may be more holistic, accepting, and less demanding. Thus, highly involved single-fathers are more likely than low involved single-fathers to be “task-oriented and concrete” due to their involvement in school activities such as homework and volunteering.

In one of the few studies on parental involvement that is linked with gender of the child, Bogenschneider (1997) uses data from students attending nine schools in California and Wisconsin, and finds that involvement of fathers does not differ by gender of the child, but mothers are more involved with daughters than with sons. Other researches have revealed gender differences in grades and test scores, and these, along with educational aspirations, have been found to be associated with parental involvement (Schneider and Coleman, 1993; Saltiel, 1985; Cohen, 1987).

### **Parents’ Educational Expectation of their children**

Parental involvement can also take the form of expectations for educational achievement. Students' perceptions of parents' educational expectations have important effects on educational outcomes (Muller and Kerbow, 1993). Males have traditionally attained higher educational and occupational structure than have females, and studies have shown that parents have higher expectations for sons than for daughters (Eccles et al, 1990; Marini and Brinton, 1984).

Even though the majority of the literature on parents' education pertains to direct and positive influence on achievement (Jimerson, Egeland, and Teo, 1999; Kohn, 1963; Luster, Rhoades, and Haas, 1989), the literature also suggests that it

influences the beliefs and behaviours of the parent, leading to positive outcomes for children and youths (Eccles, 1993). For example, Alexander, Entwisle, and Bedinger (1994) find that parents of moderate to high income, and educational background, held beliefs and expectations that are closer than those of low-income families to the actual academic achievements of their children. Low-income families instead, have high expectations and achievement beliefs that do not correlate well with their children's actual school achievement.

Alexander et al (1994) suggest that the parents' abilities to form accurate beliefs and expectations regarding their children's performance are essential in structuring the home and educational environment so that they can excel in post schooling endeavours. Halle et al (1997), using a sample of low-income minority families, also discover that mothers with higher education have higher expectations for their children's academic achievement and that these expectations are related to their children's subsequent achievement in mathematics and reading. Halle et al (1997) find that these more positive beliefs and expectations predict higher amount of achievement-related behaviour by mothers in the home as well as more positive perceptions of achievement by the children.

Patrikakou (1997) utilises data from the 1988 National Education Longitudinal Study to apply a model in an effort to better understand academic achievement among adolescents in four sample ethnic groups. The author concludes that the strongest direct impact on achievement is prior achievement, followed by student expectations. The greatest indirect effects are related to perceptions of parental expectations. The findings support the position that parental expectations and perceptions of parental expectations are essential in raising the academic expectations and, thus, the achievement of adolescents (Carter, 2002).

## **2.10 Appraisal of Literature**

Researches have demonstrated that parental involvement significantly contributes, in a variety of ways, to improve student outcomes related to learning and school success. These findings have remained reasonably consistent despite the fact that families have undergone various significant changes due to changes in time, and schools operate in very different ways (Cooper, Lindsay, and Nye, 2000; Epstein, 2001; Faires, Nichols, and Rickelman, 2000; Lopez, 2001b; Van Voorhis, 2001). Literature also indicates that parents contribute to the education of their children in various ways. For example, effective parental behaviours include helping children

with their homework, encouraging them to study, answering questions, offering guidance on educational decisions, having contact with the school and teachers, and attending school events (Fehrmann et al., 1987; Schneider and Coleman, 1993; Snow et al., 1991; Sui-Chu and Willms, 1996; U.S. Department of Education, 1987). Research findings have shown that these parent involvements and other ways that parents are involved in the academic activities of their wards, have positive effect on achievement.

Family socio-demographic factors are the factors that affect the growth and development of a child within and between the different environments of the family. For this study, these factors include parents' education, parents' occupation, parents' income, family size, number of children and marital structure, child's gender and parental educational expectation for their children. These factors have all been indicated as having a bearing on educational achievement (Frempong & Ma, 2006; Sy & Schulenberg, 2005; Mullis, Rathage & Mullis, 2003; Amato, 2001; Astone & McLanahan, 1991; Hanson, McLanahan, & Thomson, 1998; Sun & Li, 2001; Carter, 2000).

From the literature reviewed, it is evident that the previous studies are on parental involvement and achievement or family socio-demographic factors and achievement. There has been no such study that encompasses family socio-demographic factors with parental involvement and achievement. The dearth of literature in this area has necessitated the need for this present study, which is designed to examine family socio-demographic factors, parental involvement and achievement.



## **CHAPTER THREE**

### **METHODOLOGY**

This section of the research work consists of the following components: research type, sample and sampling techniques, instrumentation, data collection and data analysis.

#### **3.1 Research Type**

The study is an ex post facto type of research. Gay and Arasian (2000) explain that the causal comparative research attempts to determine reasons, or causes, for conditions that already exist. In causal comparative research, the researcher attempts to determine the cause, or reason, for pre-existing differences in groups of individuals. Both the effect and alleged cause had already occurred and are studied in retrospect.

#### **3.2 Population, Sampling Technique and Sample**

The target population for this study comprised all the junior secondary school two students and their parents in Ogun state. Multistage sampling procedure was used in selecting the sample for the study. The state has twenty local government areas which were clustered into three in consonance with the three senatorial zones (Ogun Central, Ogun East and Ogun West). Two local governments were randomly selected from each senatorial zone and five (5) schools were randomly selected per local government to give 30 schools. One intact JSS II class was used in each selected school. The parents of the students selected participated in the study. This gave a total of 1,373 sampled students and 1,373 parents that participated in the study.

**Table 3.1 Sampled Local Government Areas and Schools**

<b>Zone</b>	<b>Selected Local Government Areas</b>	<b>Number of Schools Selected</b>	<b>Number of Students Sampled</b>
Ogun	Abeokuta South	5	350
Central	Abeokuta North	5	288
Ogun East	Ijebu North	5	212
	Ijebu Ode	5	191
Ogun West	Ifo	5	177
	Ado-Odo/Ota	5	155
<b>Total</b>	<b>3</b>	<b>6</b>	<b>1,373</b>

### **3.3 Instrumentation**

Two instruments were used to collect data. These were a Questionnaire on Parents' Involvement and Students' Achievement test in English Language.

#### **Questionnaire on Parents' Involvement on the Provision of Education**

This instrument has four sections. Sections one to three were developed by the researcher, while the last section was adapted from the works of Deutscher and Ibe (2004). Section A sought information on the background characteristic of the parents and the students for identification purpose. Section B consisted of items on parent's perception of provision of basic education for their wards at the junior secondary class two level. Section C sought information on parent's expectation on children's performance. While section D sought information on involvement of parents in the provision of basic education for their children. This section had six parts seeking information about parenting, communication, volunteering, learning at home, decision making and collaborating with the community.

#### **Students' Achievement Test in English Language (SATEL)**

The English language test was a 30-item multiple choice test with 4 options. The content validity of the instrument was ensured by using the JSS two scheme of work to develop the items across Bloom's cognitive domains. Sixty items were constructed initially by the researcher. These test items were given to two teachers of English language to establish their content validity. The test items were then trial

tested on 100 Jss 2 students who were similar to the target sample from co-educational secondary schools in Ogun state. The test items were analysed using Kuder-Richardson formula 20 to establish their internal consistency and the value obtained was 0.71.

### **3.4 Validation of Questionnaire on Parents' Involvement**

Content validity of Questionnaire on Parents' Involvement was established by the supervisor and some experts in questionnaire construction. To further validate the questionnaire, it was administered to 100 parents that were not part of those used for the real study. The Cronbach's alpha method was used to establish the internal consistency (reliability) of the instrument. This method yielded the following coefficients for the instrument: parenting (0.860), communication (0.915), volunteering (0.917), learning at home (0.974), decision making (0.904) and collaborating with community (0.873).

### **3.5 Procedure for Data Collection**

The researcher and four research assistants, who were trained on how to administer the instruments, were involved in the data collection. The researcher and the assistants directly administered the instruments to the students. In each of the selected schools visited, permission was sought from the principals and thereafter, the researcher and the research assistants then distributed the instruments to one intact JSSII class in the selected schools. The students responded to the achievement test immediately and were allowed to take the parents' questionnaire home to their parents. The parents' questionnaires were collected a week later. Questionnaires with incomplete responses were discarded. A total of 1,373 questionnaires fully responded to were utilized in analysis. The data collection exercise lasted for one month.

After the period of three months, letters of appreciation were sent to the parents and were further followed up to authenticate that the parents' questionnaire was delivered to them by their wards and it was actually filled by them.

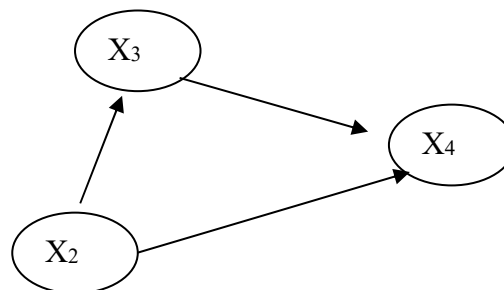
### **3.6 Data Analysis Procedure**

To analyse the data that was collected, Statistical Package for Social Sciences (SPSS) was used. For research questions 1 – 4, multiple regression and path analysis were used.

### Building the Hypothesised Recursive Path Model

In causal modeling, the causal interrelationships are examined among a set of variables that have been logically ordered on the basis of time (Sprinthal in Mertler and Vannatta (2005). The building of the hypothesised causal model shows a linear relationship among the independent and dependent variables. The specification of the model is a formal declaration of the researcher's beliefs regarding the causal links among the variables. These beliefs are typically influenced by several sources of information, including research literature, formal and informal theories, personal observations, expert opinions, common sense and logic (Mertler and Vannatta (2005). To do this, caution was taken to avoid specification errors concerning the variables to be used in the model. The researcher also took care to measure the variables to be used in the model without errors (Tate & Pedhazur, in Mertler and Vannatta, 2005). This is to say that the use of the recursive path analysis as suggested by Mertler and Vannatta (2005), is subject to the following assumptions:

1. The model must accurately reflect the actual causal sequence.
2. The structural equation for each endogenous variable includes all variables that are direct causes of that particular endogenous variable.
3. There is a one-way causal flow in the model, that is there can be no reciprocal causation between variables.
4. The relationships among variables are assumed to be linear, additive and causal in nature; any curvilinear relations are to be excluded.
5. All exogenous variables are measured without error (Tate & Pedhazur, in Mertler and Vannatta, 2005).

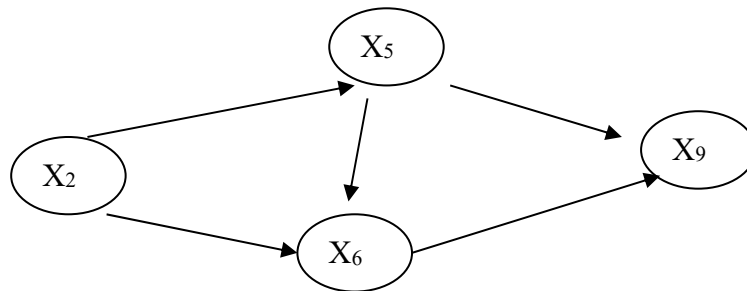


**Figure 3. 1: Hypothesised Causal Paths among  $X_i$  ( $i = 2, 3, 4$ )**

Parents' education ( $X_2$ ), Parents' occupation ( $X_3$ ), parents' income ( $X_4$ )

Consider the variables ( $X_i$ ),  $i = 2, 3, 4$ , based on available literature (Brown, 2006), it was hypothesised that parents' education ( $x_2$ ), (exogenous variable), does influence

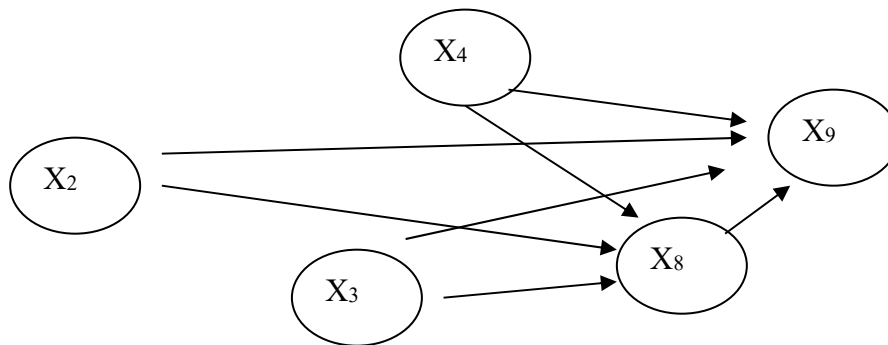
parents' occupation ( $x_3$ ) and parents' occupation can also influence their income ( $x_4$ ). Parent's education ( $X_2$ ) does also influence parents' income ( $X_4$ ) (Brown, 2006).



**Figure 3.2: Hypothesised Causal Paths among  $X_i$  ( $i = 2, 5, 6, 9$ )**

Parents' education ( $x_2$ ), number of children ( $x_5$ ) family size ( $x_6$ ), parents' involvement ( $x_9$ ).

Available research literature (Odinko, 2002; Sparling and Lownman, 1983) indicate that level of education ( $x_2$ ) influence the number of children ( $x_5$ ), and will also influence family size ( $x_6$ ) (Feinstein and Duckworth 2006). It is logical therefore, to say that the number of children ( $x_5$ ) will influence family size ( $x_6$ ). All these variables also can affect parental involvement in the provision of education for their wards ( $x_9$ ).

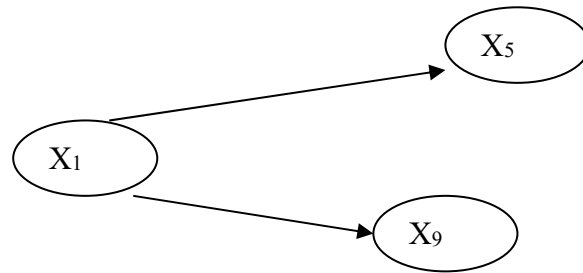


**Figure 3.3: Hypothesised Causal Paths among  $X_i$  ( $i = 2, 3, 4, 8, 9$ )**

Parents' education ( $x_2$ ), parents' occupation ( $x_3$ ), parents' income ( $x_4$ ), parents' expectation ( $x_8$ ), parents' involvement ( $x_9$ ).

Consider the variables  $X_i$  ( $i = 2, 3, 4, 8, 9$ ). There is research evidence (Sy and Schulenberg, 2005; Goyetter and Xie, 1999) that parents' education can affect parents' expectation which in turn affects parents' involvement. It has been established by theory that parents' education influences parents' occupation and therefore, the income they earn. Furthermore, Parents' income has been indicated by

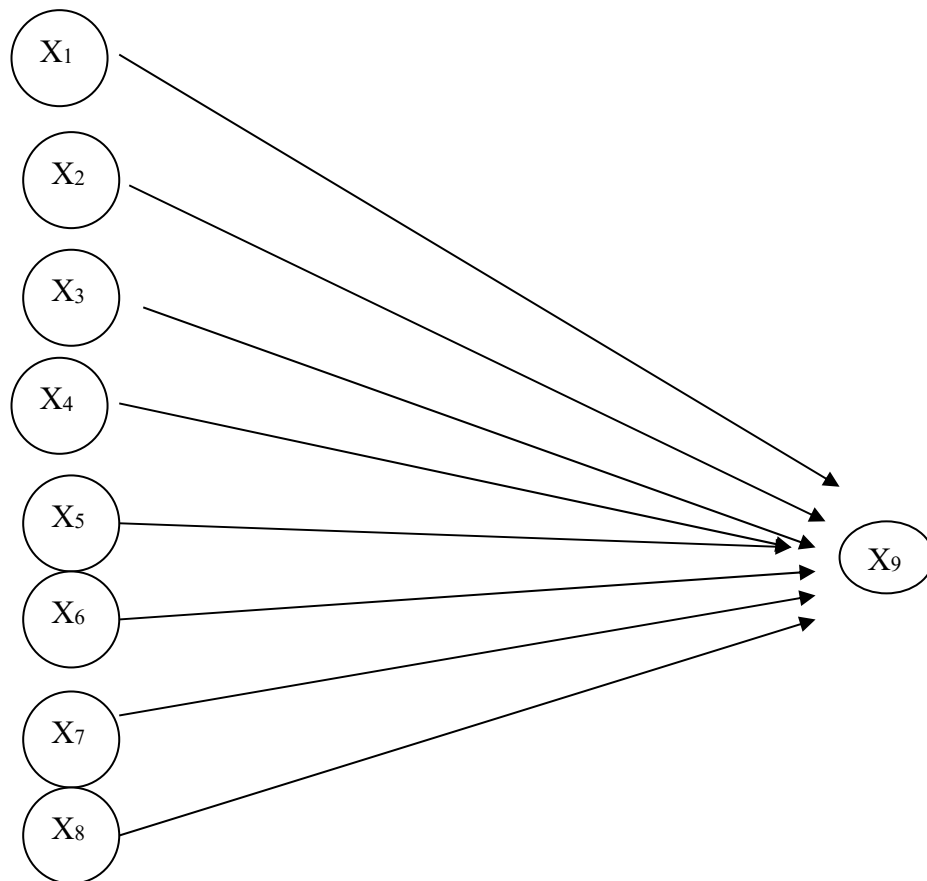
Desimone (1999) to influence involvement. It is logical; therefore, that income will influence parent's expectation on their wards' performance.



**Figure 3.4: Hypothesised Causal Paths among  $X_i$  ( $i = 1,5,9$ )**

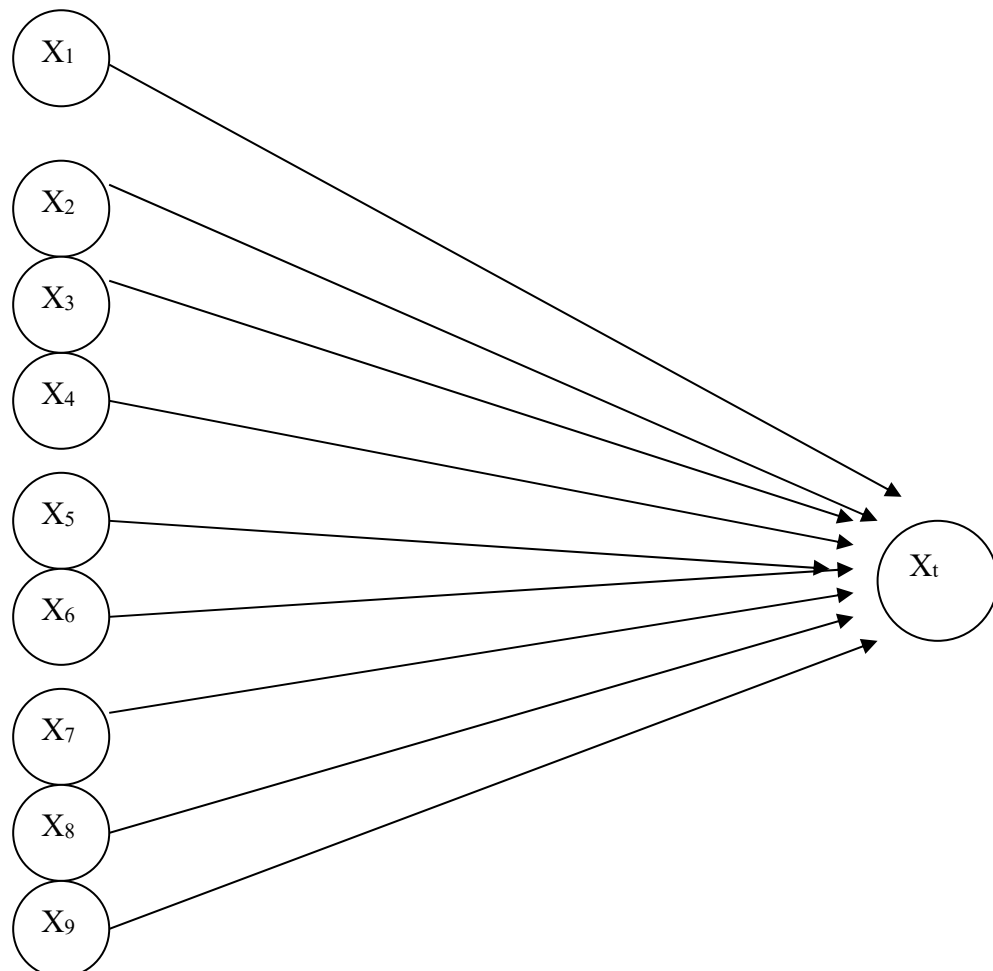
Marital structure ( $x_2$ ), number of children ( $x_6$ ) parental involvement ( $x_9$ )

On the basis of theory, it is hypothesised that marital structure can influence number of children and also influence involvement (Epstein, 1987).



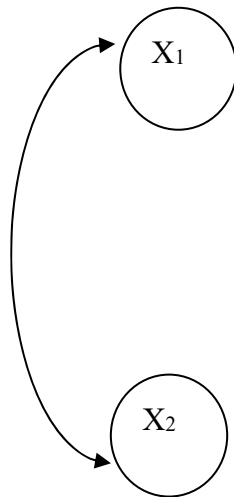
**Figure 3.5: Hypothesised Causal Paths Linking Family Socio-Demographic Factors To Parental Involvement  $X_i$  ( $i = 1,2,3,4,5,6,7,8,9$ )**

Marital structure  $X_1$ , parents' education  $X_2$ , parents' occupation  $X_3$ , parents' income  $X_4$ , number of children  $X_5$ , family size  $X_6$ , gender of the child  $X_7$ , and parental expectation on children's performance ( $X_8$ ) have been found to have influence on the parents' involvement ( $X_9$ ) (Brown 2006; Lee, Sang, Kushner, Jason, Cho, Seong, 2007).



**Figure 3.6: Hypothesised Causal Paths Linking Family Socio-Demographic Factors To Academic Achievement  $X_i$  ( $i= 1,2,3,4,5,6,7,8,9,t$ )**

Marital structure  $X_1$ , parents' education  $X_2$ , parents' occupation  $X_3$ , parents' income  $X_4$ , number of children  $X_5$ , family size  $X_6$ , gender of the child  $X_7$ , parental expectation on children's performance  $X_8$ , and parental involvement  $X_9$  in the provision of education have been found to have influence on students' achievement  $X_t$ . (Lee, Sang, Kushner, Jason; Cho and Seong, 2007; Raley and Bianchi, 2006; Brown 2006; Patrikakou, 2004).



**Figure 3.7: Correlation among  $X_i$  ( $i = 1, 2$ )**

Marital structure ( $x_1$ ), Parents' education ( $x_2$ ).

The variables  $X_i$  ( $i = 1, 2$ ) are the exogenous variables. They are variables that can influence others but cannot be influenced by other variables in the model. Theoretically, the linkages between variables 1 and 2 have double arrows showing possible bivariate correlations between the exogenous variables. That is, these variables are likely to be correlated.

There is the need to note that in this study, the hypothesised models presented are not the only possible versions. Turner and Steven in Anyanwu, (2000) and Kerlinger and Pedhazur (1973) illustrate that a study of only three (3) variables (with at least one being exogenous ) produces six (6) possible path models, a four variable study produces sixty five(65) possible diagrams, a five variable study produces several thousand possible path diagrams. Figures 3.1 to 3.7 have been synthesised into one and is presented in Figure 3.8

In order to identify the paths of the hypothesised causal model, it was necessary to explore all the hypothesised linkages by forming a set of structural equations from the hypothesised model. These structural equations are labeled



equation 3.1 to 3.8. Each equation corresponds to each dependent variable  $x_i$  ( $i = 3, 4, 5, 6, 7, 8, 9, t$ ).

$$X_3 = P_{31}X_1 + P_{32}X_2 + e_3 \quad \dots 3.1$$

$$X_4 = P_{41}X_1 + P_{42}X_2 + P_{43}X_3 + e_4 \quad \dots 3.2$$

$$X_5 = P_{51}X_1 + P_{52}X_2 + P_{53}X_3 + P_{54}X_4 + e_5 \quad \dots 3.3$$

$$X_6 = P_{61}X_1 + P_{62}X_2 + P_{63}X_3 + P_{64}X_4 + P_{65}X_5 + e_6 \quad \dots 3.4$$

$$X_7 = P_{71}X_1 + P_{72}X_2 + P_{73}X_3 + P_{74}X_4 + P_{75}X_5 + P_{76}X_6 + e_7 \quad \dots 3.5$$

$$X_8 = P_{81}X_1 + P_{82}X_2 + P_{83}X_3 + P_{84}X_4 + P_{85}X_5 + P_{86}X_6 + P_{87}X_7 + e_8 \quad \dots 3.6$$

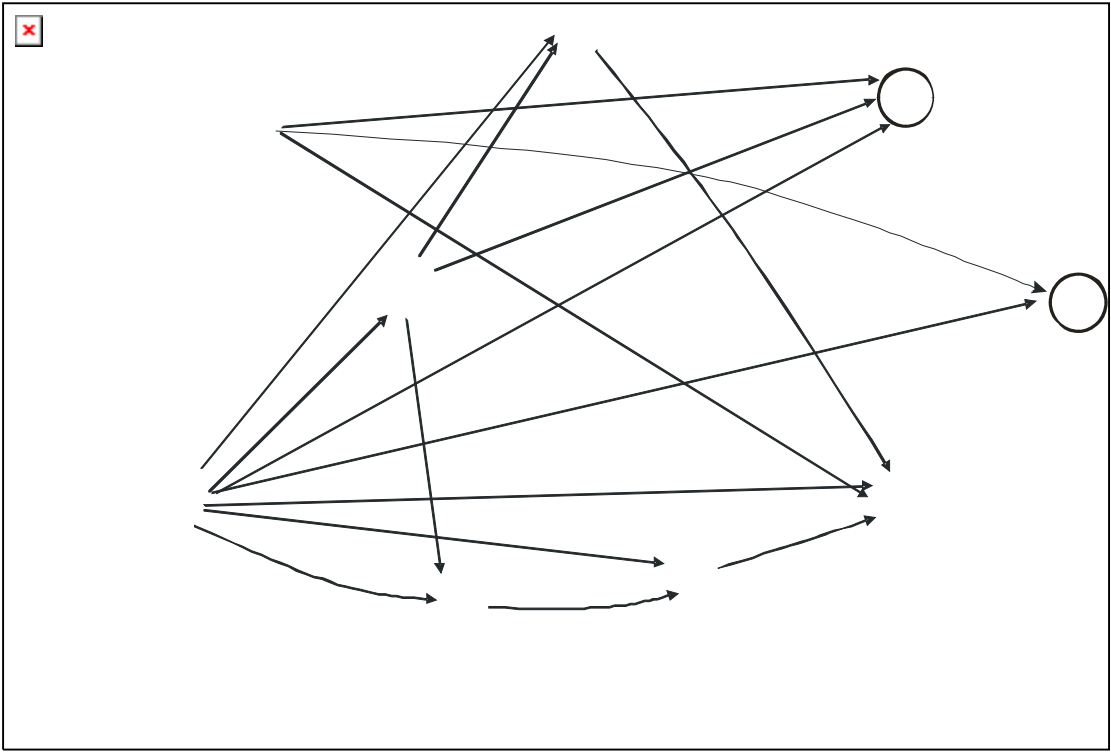
$$X_9 = P_{91}X_1 + P_{92}X_2 + P_{93}X_3 + P_{94}X_4 + P_{95}X_5 + P_{96}X_6 + P_{97}X_7 + P_{98}X_8 + e_9 \quad \dots 3.7$$

$$X_t = P_{t1}X_1 + P_{t2}X_2 + P_{t3}X_3 + P_{t4}X_4 + P_{t5}X_5 + P_{t6}X_6 + P_{t7}X_7 + P_{t8}X_8 + P_{t9}X_9 + e_t \quad 3.8$$

The above equations made it necessary to run eight regression analysis in order to compute values of the path coefficients for the hypothesised models. As recommended by some experts in causal modeling (Pedhazur, 1982; Tate, 1992; Kerlinger and Pedhazur, 1973), the path coefficient of 0.05 and above are considered significant and so retained, the insignificant paths are to be removed in order to produce the final model. This helps the researcher in trimming the paths to produce a more parsimonious model without much loss of information.

### **Validation and Verification of the Usefulness of the Model**

The original path coefficients are reproduced in the new model using normal equations. If the difference between the original and the reproduced correlations is minimal, it implies that the model is good and that the original data are consistent with the new model.



## CHAPTER FOUR

### RESULTS AND DISCUSSION

This chapter is concerned with the presentation and the interpretation of the results. The discussion of the findings arising from the results obtained from the analysis of data collected for the study is also presented in this chapter.

#### 4.1 Results

**Research question 1:** What is the most meaningful causal model involving family Socio-Demographic factors (parents' education, parents' occupation, parents' income, family size, number of children, marital structure, child's gender and parental educational expectation for their children) and (a) parental involvement in education and (b) students' achievement in English language?

s

The analytical technique used here was path analysis, which is an extension of multiple regression analysis. Unlike the multiple regression analysis which aims at establishing the contribution of the independent variables to the dependent variable, path analysis goes a bit further to determine the causal linkage between the dependent and the independent variables. In effect, path analysis is used to determine the input of each independent variable on the dependent variable, to test whether the impact is direct or indirect and at the same time enable the researcher to understand the overall total influence of that particular variable. Direct effect in this case means that each independent variable directly makes a contribution into the dependent variable, while its effects on some other independent variable is considered to be indirect. Thus, the impact of each independent variable is partitioned into direct or indirect effect and is given as  $r_{ij} = p_{ij} + TIE$

Where  $r_{ij}$  = correlation coefficient between two variables

$p_{ij}$  = direct effect

TIE = Total Indirect Effect

It therefore, follows that total indirect effect,  $TIE = r_{ij} - p_{ij}$

Hence, proportion of direct effect  $= (p_{ij}/r_{ij})$ , and the proportion of total indirect effect  $= (r_{ij} - p_{ij})/r_{ij}$ . The direct paths are the significant single paths ( $p_{ij}$ ), while the indirect pathways are the significant multiple paths.

There are 10 variables in the model with two variables operating at the exogenous level. They are:

X <sub>1</sub>	-	Marital structure
X <sub>2</sub>	-	Parents' education
X <sub>3</sub>	-	Parents' occupation
X <sub>4</sub>	-	Parents' income
X <sub>5</sub>	-	Number of children
X <sub>6</sub>	-	Family size
X <sub>7</sub>	-	Gender of the child
X <sub>8</sub>	-	Parental educational expectation
X <sub>9</sub>	-	Parental involvement
X <sub>t</sub>	-	Students' achievement in English language

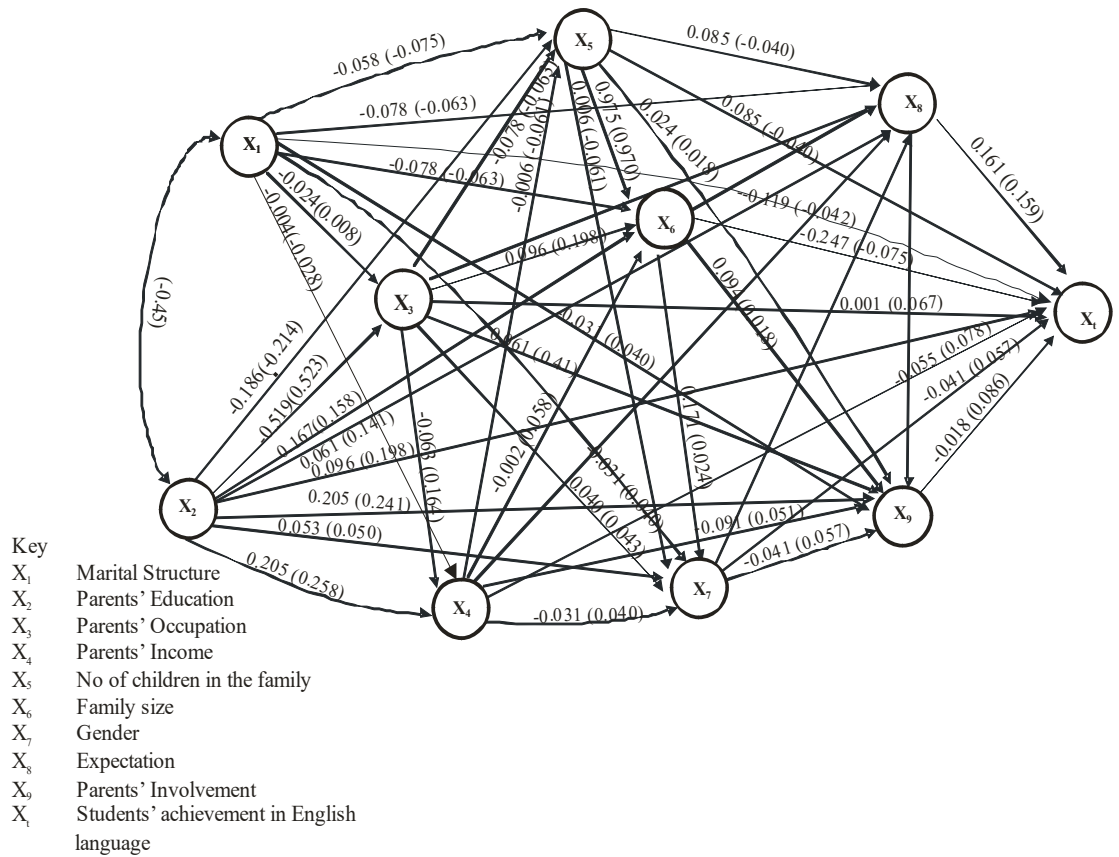
Variables X<sub>1</sub> and X<sub>2</sub> are the exogenous while x<sub>3</sub> to x<sub>t</sub> are endogenous variables. Eight different multiple regression analysis were run to determine the significant paths and the path coefficients obtained are expressed in beta weights. These are shown in Table 4.1.

**Table 4.1: Paths and Standardised Path Coefficient**

<b>Path</b>	<b>Path coefficient</b>	<b>Remark</b>
P <sub>31</sub>	.024	NS
P <sub>41</sub>	-.004	NS
P <sub>51</sub>	-.058	S
P <sub>61</sub>	.003	NS
P <sub>71</sub>	.055	S
P <sub>81</sub>	-.078	S
P <sub>91</sub>	-.073	S
P <sub>t1</sub>	-.027	NS
P <sub>32</sub>	.519	S
P <sub>42</sub>	.205	S
P <sub>52</sub>	-.186	S
P <sub>62</sub>	-.002	NS
P <sub>72</sub>	.053	S
P <sub>82</sub>	.167	S
P <sub>92</sub>	.205	S
P <sub>t2</sub>	.096	S
P <sub>43</sub>	.063	S
P <sub>53</sub>	-.085	S
P <sub>63</sub>	.001	NS
P <sub>73</sub>	.040	NS
P <sub>83</sub>	-.030	NS
P <sub>93</sub>	.061	S
P <sub>t3</sub>	.001	NS
P <sub>54</sub>	-.006	NS
P <sub>64</sub>	.002	NS
P <sub>74</sub>	.031	NS
P <sub>84</sub>	.052	S
P <sub>94</sub>	-.019	NS
P <sub>t4</sub>	.055	S
P <sub>65</sub>	.975	S
P <sub>75</sub>	-.198	S
P <sub>85</sub>	.085	S
P <sub>95</sub>	.024	NS
P <sub>t5</sub>	.238	S
P <sub>76</sub>	.171	S
P <sub>86</sub>	-.119	S
P <sub>96</sub>	.094	S
P <sub>t6</sub>	-.247	S
P <sub>87</sub>	-.028	NS
P <sub>97</sub>	.041	NS
P <sub>t7</sub>	.018	NS
P <sub>98</sub>	.041	NS
P <sub>t8</sub>	.161	S
P <sub>t9</sub>	-.018	NS

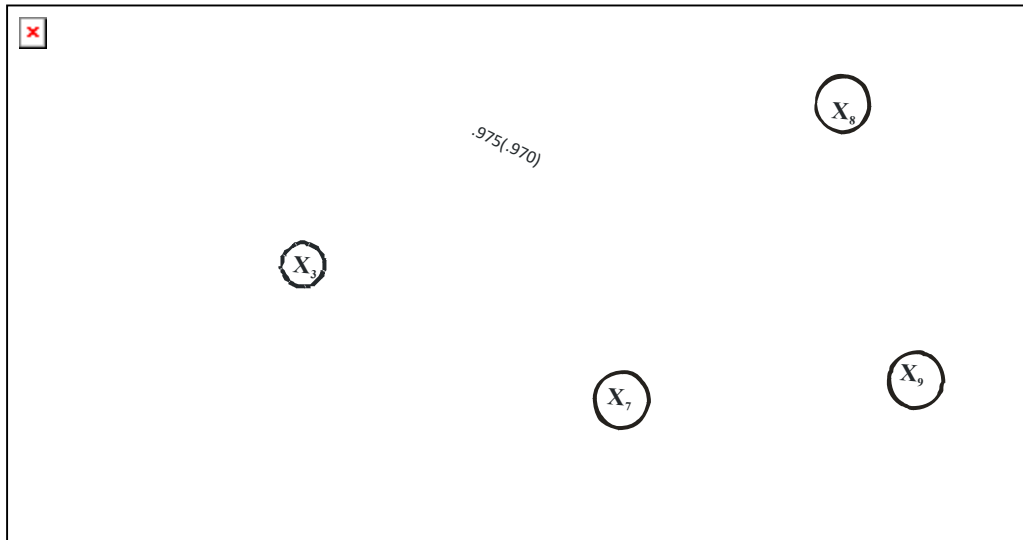
Key: S = Significant; NS = Not Significant

The hypothesised model shown in Figure 3.8 was produced again as Figure 4.1 with the path coefficients and zero order correlations written on each path way. The correlation coefficients are written in parenthesis. In trimming the paths in the model, paths were considered significant at 0.05 alpha level and considered meaningful if the absolute value of the path coefficient is at least 0.05. Only twenty-five (25) out of the forty-four (44) hypothesised paths survived the trimming exercise. Table 4.1 shows the path and the path coefficients.



Note: The values in the path diagram show the path coefficient with the correlation coefficient in parenthesis

Based on these criteria, the new path model. Figures 4.2 and 4.3, were obtained which show the most meaningful causal models involving family socio-demographic factors, parental involvement and students' achievement in English language, respectively.



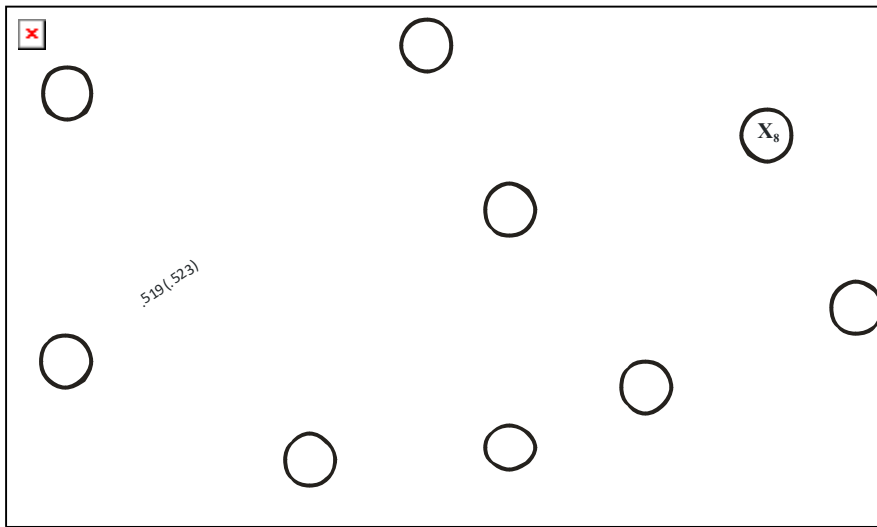
**Figure 4.2 The Parsimonious Path Model of Family Socio-Demographic Factors and Parents' Involvement**

**Key**

- X<sub>1</sub> = Marital status
- X<sub>2</sub> =Parents' education
- X<sub>3</sub> =Parent's Occupation
- X<sub>4</sub> =Parent's Income
- X<sub>5</sub>=Number of children
- X<sub>6</sub>=Family size
- X<sub>7</sub>=Gender of the child
- X<sub>8</sub> =Parents educational expectation
- X<sub>9</sub> =Parental involvement

Note: The values in the path diagram show the path coefficient with the correlation coefficient in parenthesis





**Figure 4.3 The Parsimonious Path Model of Family Socio-Demographic Factors, Parents' Involvement and Students' Achievement in English Language**

**Key**

X<sub>1</sub> = Marital status

X<sub>2</sub> =Parents' education

X<sub>3</sub> =Parent's Occupation

X<sub>4</sub> =Parent's Income

X<sub>5</sub>=Number of children

X<sub>6</sub>=Family size

X<sub>7</sub>=Gender of the child

X<sub>8</sub> =Parents educational expectation

X<sub>9</sub> =Parental involvement

X<sub>t</sub> =Achievement

Note: The values in the path diagram show the path coefficient with the correlation coefficient in parenthesis

### **Verification of the Model**

To verify the efficacy of the new model (Figure 4.1), the reproduced correlation coefficients (based on the new path model) were compared with the original correlation coefficients. Table 4.2 shows the original and reproduced correlation matrix, while Tables 4.3 and 4.4 show discrepancies between the original and the reproduced correlations. As shown in these tables, the discrepancies between the original and the reproduced correlation were found to be very minimal (less than 0.05). These minimal discrepancies thus indicate that the pattern of correlation in the observed data is consistent with the new model. The new path models Figures 4.2 and 4.3 are therefore considered tenable in explaining the causal interaction between the predictor variables (family socio-demographic factors) and the criterion variables (parental involvement and achievement in English language).

**Table 4.2: Correlation Matrix Showing the Original and the Reproduced Correlation Coefficients for the Ten Variables**

	Marital structure (x <sub>1</sub> )	Parents' education (x <sub>2</sub> )	Parents' occupation (x <sub>3</sub> )	Parents' income (x <sub>4</sub> )	No of children in the family (x <sub>5</sub> )	Family size (x <sub>6</sub> )	Gender (x <sub>7</sub> )	Expectation (x <sub>8</sub> )	Involvement (x <sub>9</sub> )	English score (x <sub>t</sub> )
Marital structure (x <sub>1</sub> )	1	-.046	.008	-.028	-.075	-.060	.031	-.063	-.012	-.028
Parents' education (x <sub>2</sub> )	-.046	1	.523	.258	-.214	-.210	.050	.158	.241	.198
Parents' occupation (x <sub>3</sub> )	.001	.518	1	.164	-.193	-.184	.043	.065	.141	.067
Parents' income (x <sub>4</sub> )	-.013	.238	.169	1	-.061	-.058	.040	.060	.051	.078
No of children in the family (x <sub>5</sub> )	-.049	-.229	-.182	-.064	1	.970	-.033	-.040	.008	-.071
Family size (x <sub>6</sub> )	-.045	-.224	-.179	-.061	.975	1	-.024	-.042	.018	-.075
Gender (x <sub>7</sub> )	.054	.086	.079	.052	-.055	-.045	1	-.040	.057	.004
Expectation (x <sub>8</sub> )	-.087	.173	.069	.088	-.063	-.068	-.017	1	.096	.159
Involvement (x <sub>9</sub> )	-.090	.219	.149	.039	.058	.061	.052	.073	1	.086
English score (x <sub>t</sub> )	-.044	.137	.070	.093	-.039	-.52	.022	.185	.019	1

Note: Entries above the diagonal are the original correlation coefficients.  
 Entries below the diagonal are the reproduced correlation coefficients.

**Table 4.3: Discrepancies between the Original and Reproduced Correlation Coefficient for Parental Involvement**

Correlation	Original	Reproduced	Difference
r13	.0001	.0080	.0079
r14	-.0134	-.0280	-.0146
r15	-.0494	-.0750	-.0256
r16	-.0451	-.0600	-.0149
r17	.0542	.0310	-.0232
r18	-.0867	-.0630	.0237
r19	-.0886	-.0120	.0766*
r23	.5179	.5230	.0051
r24	.2378	.2580	.0202
r25	-.2288	-.2140	.0148
r26	-.2242	-.2100	.0142
r27	.0855	.0500	-.0355
r28	.1725	.1580	-.0145
r29	.2188	.2410	.0222
r34	.1692	.1640	-.0052
r35	-.1824	-.1930	-.0106
r36	-.1775	-.1840	-.0065
r37	.0785	.0430	-.0355
r38	.0689	.0650	-.0039
r39	.1487	.1410	-.0077
r45	-.0638	-.0610	.0028
r46	-.0606	-.0580	.0026
r47	.0519	.0400	-.0119
r48	.0881	.0600	-.0281
r49	.0392	.0510	.0118
r56	.9750	.9700	-.0050
r57	-.0554	-.0330	.0224
r58	-.0627	-.0400	.0227
r59	.0579	.0080	-.0499
r67	-.0454	-.0240	.0214
r68	-.0676	-.0420	.0256
r69	.0607	.0180	-.0427
r78	-.0169	-.4040	-.3871*
r79	.0522	.0570	.0048
r89	.0727	.0960	.0233
<b>Total</b>	1.6813	1.281	-0.4003
<b>Mean</b>			-0.0091

\* Means not significant at 0.05 alpha level

**Table 4.4: Discrepancies between the Original and Reproduced Correlation Coefficient for Achievement in English Language**

<b>Correlation</b>	<b>Original</b>	<b>Reproduced</b>	<b>Difference</b>
r <sub>13</sub>	.0001	.0080	.0079
r <sub>14</sub>	-.0134	-.0280	-.0146
r <sub>15</sub>	-.0494	-.0750	-.0256
r <sub>16</sub>	-.0451	-.0600	-.0149
r <sub>17</sub>	.0542	.0310	-.0232
r <sub>18</sub>	-.0867	-.0630	.0237
r <sub>19</sub>	-.0886	-.0120	.0766*
r <sub>1t</sub>	-.0442	-.0280	.0162
r <sub>23</sub>	.5179	.5230	.0051
r <sub>24</sub>	.2378	.2580	.0202
r <sub>25</sub>	-.2288	-.2140	.0148
r <sub>26</sub>	-.2242	-.2100	.0142
r <sub>27</sub>	.0855	.0500	-.0355
r <sub>28</sub>	.1725	.1580	-.0145
r <sub>29</sub>	.2188	.2410	.0222
r <sub>2t</sub>	.1373	.1980	.0607*
r <sub>34</sub>	.1692	.1640	-.0052
r <sub>35</sub>	-.1824	-.1930	-.0106
r <sub>36</sub>	-.1775	-.1840	-.0065
r <sub>37</sub>	.0785	.0430	-.0355
r <sub>38</sub>	.0689	.0650	-.0039
r <sub>39</sub>	.1487	.1410	-.0077
r <sub>3t</sub>	.0703	.0670	-.0033
r <sub>45</sub>	-.0638	-.0610	.0028
r <sub>46</sub>	-.0606	-.0580	.0026
r <sub>47</sub>	.0519	.0400	-.0119
r <sub>48</sub>	.0881	.0600	-.0281
r <sub>49</sub>	.0392	.0510	.0118
r <sub>4t</sub>	.0925	.0780	-.0145
r <sub>56</sub>	.9750	.9700	-.0050
r <sub>57</sub>	-.0554	-.0330	.0224
r <sub>58</sub>	-.0627	-.0400	.0227
r <sub>59</sub>	.0579	.0080	-.0499
r <sub>5t</sub>	-.0393	-.0710	-.0317
r <sub>67</sub>	-.0454	-.0240	.0214
r <sub>68</sub>	-.0676	-.0420	.0256
r <sub>69</sub>	.0607	.0180	-.0427
r <sub>6t</sub>	-.0516	-.0750	-.0234
r <sub>78</sub>	-.0169	-.4040	-.3871*
r <sub>79</sub>	.0522	.0570	.0048
r <sub>7t</sub>	.0221	.0040	-.0181
r <sub>89</sub>	.0727	.0960	.0233
r <sub>8t</sub>	.1850	.1590	-.0260
r <sub>9t</sub>	.0191	.0860	.0669*
<b>Total</b>			<b>-0.3735</b>
<b>Mean</b>			<b>-0.0085</b>

\* Means not significant at 0.05 alpha level

**Research Question 2: What are the directions as well as estimates of the strengths of the causal paths of the variables in the model?**

The direction of the causal paths of the variables in the model were obtained based on the criteria of pathways which are (i) significant (ii) meaningful and (iii) have a link with the criterion variables parental involvement (var. 9) and students' achievement in English language (var. t). The direct are 24 and 25, for parental involvement and students' achievement in English language, respectively. These direct and indirect parts are shown in Tables 4.5.

The beta weights of the paths (path coefficients) which give the estimates of the strengths of the causations are shown in Figures 4.2 and 4.3. From these weights, the actual values of the indirect paths were obtained by multiplying the beta weights of component single paths and the correlations  $r_{13}$ ,  $r_{23}$ ,  $r_{14}$ ,  $r_{24}$ , etc, as applicable.

The magnitude of the beta weight shows the estimates of the strengths of causation, that is, it is proportional to the degree of the effects of the causative variable. It thus follows, going by Table 4.5, that P<sub>65</sub> (family size to number of children in the family) has the highest strength of causation. It has a path coefficient of .975 measured at alpha level of 0.05.

**Table 4.5: Significant Paths and Path Coefficients**

<b>Path</b>	<b>Path coefficient</b>	<b>Remark</b>
P <sub>51</sub>	-.058	S
P <sub>71</sub>	.055	S
P <sub>81</sub>	-.078	S
P <sub>91</sub>	-.073	S
P <sub>32</sub>	.519	S
P <sub>42</sub>	.205	S
P <sub>52</sub>	-.186	S
P <sub>72</sub>	.053	S
P <sub>82</sub>	.167	S
P <sub>92</sub>	.205	S
P <sub>t2</sub>	.096	S
P <sub>43</sub>	.063	S
P <sub>53</sub>	-.085	S
P <sub>93</sub>	.061	S
P <sub>84</sub>	.052	S
P <sub>t4</sub>	.055	S
P <sub>65</sub>	.975	S
P <sub>75</sub>	-.198	S
P <sub>85</sub>	.085	S
P <sub>t5</sub>	.238	S
P <sub>76</sub>	.171	S
P <sub>86</sub>	-.119	S
P <sub>96</sub>	.094	S
P <sub>t6</sub>	-.247	S
P <sub>t8</sub>	.161	S

**Key: S = Significant**

**Research Question 3: What are the direct and indirect effects of the variables on parents' involvement and students' achievement in English language?**

The significant and meaningful pathways through which all the predictors caused variation in the criterion variable are shown in Table 4.6. There are 24 and 25 pathways through which all the predictors caused variation on the dependent variables (parent involvement var. 9, and student's achievement var. t). Out of these pathways, only 4 and 5, respectively, are direct while the rest are indirect.

**Table 4.6: Analysis of Significant Pathways of Parental Involvement**

Normal equation	Direct path	Indirect path
r 19	P91	e.g. P92r12, P94r14
r 29	P92	e.g. P91r12, P93r23, P94r24
r 39	P93	e.g. P91r13, P92r23, P94r34
r 49	-	e.g. P91r14, P92r24, P93r34, P94
r 59	-	e.g. P91r15, P92r25, P93r35, P94r45
r 69	P96	e.g. P91r16, P92r26, P93r36, P94r46, P95r56
r 79	-	e.g. P91r17, P92r27, P93r37, P94r47,
r 89	-	e.g. P91r18, P92r28, P93r38, P94r48
<b>Total</b>	<b>4</b>	<b>21</b>

The results in Table 4.6 show that 4 predictor variables had direct effect on parental involvement. These are marital structure (var. 1) ( $\beta = -.073$ ), parents' education (var. 2) ( $\beta = .205$ ), parents' occupation (var. 3) ( $\beta = .061$ ), and family size (var. 6) ( $\beta = .094$ ). Parents' education had the highest direct contribution, followed by family size, marital structure and parents' occupation.



**Table 4.7: Analysis of Significant Pathways on Students' Achievement**

Normal equation	Direct path	Indirect path
r <sub>1t</sub>	-	e.g. P <sub>t2r12</sub> , P <sub>t4r14</sub>
r <sub>2t</sub>	P <sub>t2</sub>	e.g. P <sub>t1r12</sub> , P <sub>t3r23</sub> , P <sub>t4r24</sub>
r <sub>3t</sub>	-	e.g. P <sub>t1r13</sub> , P <sub>t2r23</sub> , P <sub>t4r34</sub>
r <sub>4t</sub>	P <sub>t4</sub>	e.g. P <sub>t1r14</sub> , P <sub>t2r24</sub> , P <sub>t3r34</sub> , P <sub>t4</sub>
r <sub>5t</sub>	P <sub>t5</sub>	e.g. P <sub>t1r15</sub> , P <sub>t2r25</sub> , P <sub>t3r35</sub> , P <sub>t4r45</sub>
r <sub>6t</sub>	P <sub>t6</sub>	e.g. P <sub>t1r16</sub> , P <sub>t2r26</sub> , P <sub>t3r36</sub> , P <sub>t4r46</sub> , P <sub>t5r56</sub>
r <sub>7t</sub>	-	e.g. P <sub>t1r17</sub> , P <sub>t2r27</sub> , P <sub>t3r37</sub> , P <sub>t4r47</sub> ,
r <sub>8t</sub>	P <sub>t8</sub>	e.g. P <sub>t1r18</sub> , P <sub>t2r28</sub> , P <sub>t3r38</sub> , P <sub>t4r48</sub>
r <sub>9t</sub>	-	e.g. P <sub>t2r12</sub> , P <sub>t4r14</sub>
<b>Total</b>	<b>5</b>	<b>20</b>

The results in Table 4.7 show that 5 predictor variables had direct effect on students' achievement in English language. These are number of children ( $\beta=.238$ ), parental expectation ( $\beta=.161$ ), parents' education ( $\beta=.096$ ), parents' income ( $\beta=.055$ ) and family size ( $\beta=-.247$ ). Number of children had the highest direct contribution, followed by parental expectation, parents' education, parents' income and family size.

**Research Question 4: What proportion of the total effects are (a) direct and (b) Indirect?**

Tables 4.8 and 4.9. show the decomposition of the total effects into direct and indirect effects of independent variables, respectively, on parental involvement and students' achievement in English language.

The result of the proportion of the total effect of the variables on parental involvement is presented in Table 4.8.

**Table 4.8: Decomposition of the Total Effects of the Independent Variable on Parental Involvement**

<b>Criterion variable</b>	<b>Predictor variable</b>	<b>Direct Effect</b>	<b>% of Direct Effect</b>	<b>Indirect Effect</b>	<b>% of Indirect Effect</b>	<b>Total Effect</b>	<b>% of Total Effect</b>
<b>Parental Involvement (Variable 9)</b>	<b>Marital structure</b>	-0.073	16.86	-0.061	13.12	.012	1.923
	<b>Parents' education</b>	.205	47.34	0.036	7.74	.241	38.62
	<b>Parents' occupation</b>	.061	14.09	0.08	17.20	.141	22.59
	<b>Parents' income</b>			.051	10.97	.051	8.17
	<b>No of children in the family</b>			.008	1.72	.008	1.28
	<b>Family size</b>	.094	21.71	-0.076	16.34	.018	2.88
	<b>Gender</b>			.057	12.26	.057	9.13
	<b>Expectation</b>			.096	20.65	.096	15.38
	<b>Total</b>	<b>0.433</b>	<b>100</b>	<b>0.465</b>		<b>0.624</b>	<b>99.99</b>
	<b>Proportion</b>	<b>48.22</b>		<b>51.78</b>			

**Note** Total Effects = Original correlation coefficient

Direct Effects = Path coefficients

Indirect Effects = Total Effects – Direct Effects

Absolute values of the Total Effects and Direct Effects were used for the computation.

The result of multiple regression shows that the total effects of all the eight predictor variables on the criterion variable (parental involvement) obtained from regression analyses of the data, showed that  $R^2$  was .072. This means that only 7.2 % of the variations in parental involvement was accounted for by the eight independent variables when taken together. The table also shows that the decomposition of the total effects (7.2%) into direct effect was (48.22%) and indirect effect was (51.78%).

Table 4.8 shows that four independent variables (parents' education (var. 2), family size (var. 6), parents' occupation (var. 3) and marital structure (var. 1) have both direct and indirect effects on the criterion variable (parental involvement). The other four independent variables (parents' income (var.4), number of children in the family (var.5), gender (var.7) and parents' expectation (var.8)) have only indirect effect on the criterion variable (parental involvement).

The results, therefore showed that among the four variables that had direct effect on the dependent variable, parents' education ( $x_2$ ) contributed most ( $\beta = .205$ ). This was followed by family size ( $x_6$ ) ( $\beta = .094$ ), parents' occupation ( $x_3$ ) ( $\beta = .061$ ) and, lastly, by marital structure ( $x_1$ ) ( $\beta = -.073$ ). The contribution of the four variables were significant and meaningful. The four other independent variables did not have direct effect on the dependent variable (parents' involvement).

The decomposition of the total effects of all the nine independent variables on students' achievement in English language are shown in Table 4.9.

**Table 4.9: Decomposition of the Total Effects of the Independent Variables on Achievement into Direct and Indirect Effects**

<b>Criterion variable</b>	<b>Predictor variable</b>	<b>Direct Effect</b>	<b>% of Direct Effect</b>	<b>Indirect Effect</b>	<b>% of Indirect Effect</b>	<b>Total Effect</b>	<b>% of Total Effect</b>
<b>Students' achievement (var. t)</b>	<b>Marital structure</b>			-.028	3.49	-.028	3.65
	<b>Parents' education</b>	.096	12.05	0.102	12.73	.198	25.85
	<b>Parents' occupation</b>			.067	8.36	.067	8.75
	<b>Parents' income</b>	.055	6.90	.023	2.87	.078	10.18
	<b>No of children in the family</b>	.238	29.86	.167	20.85	-.071	9.26
	<b>Family size</b>	-.247	30.99	.322	40.19	-.075	9.79
	<b>Gender</b>			.004	0.49	.004	0.52
	<b>Expectation</b>	.161	20.20	.002	0.25	.159	20.75
	<b>Involvement</b>			.086	10.74	.086	11.23
	<b>Total</b>	<b>0.797</b>	<b>99.99</b>	<b>0.801</b>	<b>99.99</b>	<b>0.766</b>	<b>100</b>
<b>Proportion</b>	<b>49.87</b>		<b>50.13</b>				

**Note** Total Effects = Original correlation coefficient

Direct Effects = Path coefficients

Indirect Effects = Total Effects – Direct Effects

Absolute values of the Total Effects and Direct Effects were used for the computation

The result of multiple regression shows that the total effects of all the nine predictor variables on the criterion variable (students' achievement in English language) obtained from the regression analysis of the data showed that  $R^2$  was 0.052. This means that only 5.2% of the variations in the students' achievement was accounted for by the nine independent variables when taken together. The table also shows that the decomposition of the total effects (5.2%) into direct effect was 49.87% and indirect effect was 50.13%.

Table 4.9 further reveals that five independent variables: number of children in the family ( $x_5$ ), parents' educational expectation ( $x_8$ ), parents' education ( $x_2$ ), parents' income ( $x_4$ ) and family size ( $x_6$ ), had direct effect on the criterion variable of students'

achievement in English language. Number of children in the family ( $x_5$ ) ( $\beta=.238$ ) contributed the most. This was followed by, parents' educational expectation ( $x_8$ ) ( $\beta=.161$ ), parents' education  $x_2$ ( $\beta=.096$ ) parents' income ( $x_4$ )( $\beta=.055$ ) and, lastly, by family size ( $x_6$ ) ( $\beta=-.247$ ). The contributions of these variables were significant and meaningful.

## **4.2 Discussion**

### **Causal Explanations of Family Socio-Demographic Factors on Parental Involvement in the Provision of Basic Education**

The findings of the study in relation to causal explanations of family socio-demographic factors on parental involvement indicated that 7.2% of the variance in the parental involvement was jointly accounted for by all the eight predictor variables. Weight estimation of the contribution of each independent variable to the variance in parents' involvement indicate that parents' education ( $\beta = 0.205$ ) was the most potent contributor to the prediction followed by family size ( $\beta =0.094$ ), parents' occupation ( $\beta =0.061$ ) and, lastly, marital structure ( $\beta = -0.073$ ), in that order. The remaining 92.8% of the variability might have been due to factors other than those considered in this study. Findings show that only these four variables had both direct and indirect causal influence on the parental involvement. The other four: parents' income, number of children in the family, child's gender and parents' educational expectation, had only indirect influence on parental involvement.

Parents' education was the most important variable that had causal influence on parental involvement. Finding shows that the impact of parents' education is 38.62% of the total effect value on parents' involvement. This variable has both direct and indirect influence on parents' involvement with path coefficient of 0.205. This finding corroborates the findings of Brown (2006) that more educated parents invest in their wards' education. The relationship between parental education and educational investments was fairly strong. The results suggest that the amount of schooling that parents receive influences how they structure their involvement as well as how they interact with their children in promoting academic achievement. Parents' education may help parents be more efficient teachers at home because they are more likely to know

something about what the children are being taught and thus, able to help with homework and to provide appropriate cognitive stimulation when children are not in school.

Family size had a direct causal link with parental involvement with path co-efficient of 0.094. Findings show that the impact of the variable was 2.88% of the total effect values on the parental involvement was made. Parents' occupation has a causal link with parental involvement. It had both direct and indirect effect on the parent involvement with a path co-efficient of .061. Finding shows that the impact of this variable was 22.59% of the total effect of parents' occupation on parental involvement. This finding agrees with previous studies like Muller (2005) who discovers that overwhelmingly, parents are most involved when they are employed. These parents have the highest levels of almost every form of positive involvement. The observed pattern exists in all types of family structures e.g. intact families (where parents are living together and are not divorced) and single parent families. Probably, as Muller (2005) contends, these parents are involved at higher levels in many unmeasured ways with their children.

Marital structure had the least direct causal link with parental involvement with a path co-efficient of -.073. Finding shows that the impact of marital structure was 1.92% of the total effect values on the parental involvement. This corroborates the findings of Balli *et al* (1998) and Peng and Wright (1994) that two-parent families are likely to spend more time with their child doing homework and to participate in lessons outside of school. Raley, Frisco and Wildsmith's (2005) study, also suggests that family instability has negative effects on educational outcomes over and above the negative effects due to the lower resources available to children in single parent. This reason may probably have been responsible for the low direct link marital structure has with parental involvement in this study.

Parents' income had only indirect effect on parental involvement. The result is consistent with the finding of Davis-Kean (2005) whose research used a much broader national sample and found some important differences in the paths linking education and income to children's academic achievement.

Number of children in the family had only indirect effect on the parental involvement. This corroborates Kalenkoski, Ribar and Stratton (2006) who found no

significant effect of number of children and time devoted by parents on the care of their ward.

Gender of the child also had indirect link with parental involvement. The result may not be altogether surprising due to the emphasis which is now laid on the fact that the gender of the child should not determine parents' level of involvement in the child's education. This is consistent with the findings of Ogunsanwo (2003) where no significant difference in child's gender and involvement in the provision of basic education was found, but contradicts Davis-Kean (2005) who discovers notable gender effects in his study.

Parents' educational expectation also had only indirect link with parental involvement. This is contrary to the findings of Patrikakou (2004) which indicates parents' educational expectations as a strong form of parent involvement. Parents who hold high expectations for their children, communicate them clearly and encourage their wards to work hard in order to attain them to make a difference in their performance.

### **Causal Explanations of Family Socio-Demographic Factors, Parental Involvement and Students' Achievement in English language**

The findings of the study in relation to the causal explanation of family socio-demographic factors on students' achievement in English language indicated that the nine independent variables made a significant contribution of 5.2%, on the variance in students' achievement in English language that was statistically significant at  $p < 0.05$ . Weight estimation of the contribution of each independent variable indicates that number of children ( $\beta = 0.238$ ) was the most potent contributor to the prediction on students' achievement in English language followed by parents' educational expectation ( $\beta = 0.161$ ), parents' education ( $\beta = 0.096$ ), parents' income ( $\beta = 0.055$ ), and family size with  $\beta$  weight of  $-0.247$ , in that order. Findings also indicate that five variables (family size, number of children in the family, parents' education, parents' educational expectation and parents' occupation) had both direct and indirect causal influence on students' achievement in English language while the other four (marital structure, parents' occupation, gender and parental involvement) had only indirect causal influence on students' achievement in English language. The nine independent variables jointly

contributed 49.87% direct and 50.13% indirect effects to students' achievement in English language.

Number of children in the family with a total effect of 9.6% had both direct and indirect effect on the students' achievement in English language. The findings demonstrate that students from homes of small size family performed better than students from homes of large size family.

Parents' educational expectation with 20.75% has both direct and indirect significant causal influence on students' achievement in English language. The result is consistent with the findings of Davis-Kean (2005) which observed that parental expectations for schooling has a moderate total effect on achievement of the European-American samples and indirect effect on achievement of the African-American sample he used. Thus, the expectation that a child will graduate has important implications for the types of stimulation provided in the home as well as an indication of the relationship between parent and child. This association can reflect two processes: (a) the provision of a more cognitively stimulating and emotionally supportive environment from the beginning and (b) an increased ability to adjust the home environment to meet the needs of their children as the parents receive information about their children's performance in school. This intensifies parents' involvement in the provision of education.

Parents' education was an important variable that had both direct and indirect causal influence on students' achievement in English language. The relationship between parental education and educational investments is quite strong. Finding shows that the impact of parents' education is 25.85% of the total effect value on the dependent variable of students' achievement in English language. This finding is consistent with the findings of Brown (2006) that more educated parents invest in their wards' education. Ojedele (1992) also finds that literate parents are more involved in their wards' education. According to him, they are in a better position academically, socially and financially to support their wards educationally. Parents' education may help parents be more efficient teachers at home because they are more likely to know more about what the children are being taught and thus able to help with learning at home and to provide appropriate cognitive stimulation when children are not in school than illiterate parents.



Finding shows that parents' income had both direct and indirect effect and made 10.18% of the total effect value on students' achievement in English language. The result is consistent with the findings of Davis-Kean (2005) who used a much broader national sample and found some important differences in the paths linking education and income to children's academic achievement. This finding indicates that the economic difficulties, which still exist in many Nigeria families, do certainly constrain academic achievement. This is to say that poverty certainly is a major threat to child development. But, if parents are successful in providing an emotionally stable and stimulating environment, the negative effects of financial restrictions can be minimized.

Family size had a direct causal link with students' achievement in English language. Findings show that the impact of family size was 9.79% on the total effect values on students' achievement in English language. This is in line with Haecker's (2006) support of the resource-dilution model and its prediction that as the number of children increases, the proportion of parental resources for each child decreases, thus decreasing the potential for higher learning and intelligence.

Marital structure had only indirect causal link influence on student achievement in English language. It has 3.65% of the total effect value on students' achievement in English language. Raley, Frisco and Wildsmith's (2005) results, also suggest that family instability has negative effects on educational outcomes over and above the negative effects due to the lower resources available to children in single parent families. Of course, resources matter as evidenced by the fact that those who live with single parent families have lower educational attainment.

Parents' occupation and gender of the child had only indirect causal influences on students' achievement in English language. The result may not be altogether surprising due to the fact that emphasis is now laid on the fact that the gender of the child should not determine parents' level of involvement in the child's education. These findings are contrary to Davis-Kean (2005) who finds notable gender effects in his study.

Finding shows that parental involvement had no causal link with achievement in English language, it is not significant and not meaningful. As would have been expected; based upon some findings from parents' involvement programmes, students' academic work improve when parents are actively involved in students' academic work (Hoover-

Dempsey et al, 2001). Ogunsanwo (2003) also finds in her study that high parental involvement was effective in enhancing higher academic scores. The finding in this study, that there is no causal linkage between parental involvement and achievement in English language may be due to the fact that parental involvement drops at the adolescent level (Epstein, 1995; Catsambis and Garland, 1997). This implies that many parents believe that the junior secondary school students can do their home work on their own while and many may not know how and to what degree they should help. However, since this study reveals low parental involvement, it implies that the students would perform better if their parents have interest in checking up, explaining their homework to them and making sure they do given assignments.

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS**

This chapter presents the summary of findings, educational implications, recommendations as well as suggestions for further research.

The thirst for education is insatiable in the life of every human being. This is because education leads to the development of a person. It also leads to the socio-economic development of a nation. In an attempt to enhance what the Federal Government of Nigeria in the National Policy on Education (2004) describes as access to education, especially among children, irrespective of their socio-economic and geographical background and in a bid to meet the need for lifelong basic education, the Universal Basic Education (UBE) has been introduced.

However, it is obvious that government alone cannot provide all the inputs to education without the involvement of other stakeholders in education such as the parents, the community, voluntary agencies, private individuals and non-governmental organisations. There is a need for serious government-parent partnership in the area of provision of education in the country. To ensure children's education, therefore, parents' involvement cannot be underscored. It could be regarded as a major issue that calls for attention in ensuring students' achievement in schools. Basically, certain factors are essential for parents to be involved in their wards' education. Of interest in this study are factors relating to family socio-demography. Among which are parents' education, parents' occupation, parents' income, family size, number of children marital structure child's gender and parental educational expectation for their children that could influence parental involvement in the provision of basic education for their wards. In Nigeria however, the dearth of studies in parent involvement is serious, especially, at the secondary school level.

The present study, therefore, is interested in the extent to which the stated family socio-demographic factors explain parental involvement and students' achievement in English language by constructing and testing a ten-variable model for providing a causal

explanation for the provision of education at the basic level for Jss class two students. Findings of the study have shown that there is a need for parents to be fully involved in the provision of education for their wards.

Thus, one of the purposes of this study is to identify the factors responsible for parents' involvement and to prove that if parents can be encouraged to jointly participate in the provision of basic education, it could contribute greatly to students' academic achievement.

### **5.1 Summary of Findings**

The major findings of this investigation are summarised as follows: Eight independent variables (family socio-demographic variables) accounted for 7.2% of the variance in parental involvement at the Jss class two level. The most meaningful causal model involving family socio-demographic factors and parent involvement had 24 significant pathways through which parents' involvement was influenced. Four of the eight variables (parents' education, parents' occupation, marital structure and family size) significantly exerted 48.22% direct causal influence when decomposed on parental involvement while the other four variables (parents' income, number of children, gender of the child and parental expectation) exerted 51.78% indirect causal influence on parental involvement through other variables.

Similarly, nine independent variables (family socio-demographic factors and parental involvement) accounted for 5.2% of the variance in students' achievement in English language at the junior secondary class two level. The most meaningful causal model involving nine independent variables and students' achievement in English language, had 25 significant pathways through which students' achievement in English language was influenced. Five of the variables (number of children in the family, parental expectation, parents' education, parents' income and family size) significantly exerted both direct and indirect influence on students' achievement in English language. The other four variables (parents' education, parents' occupation, gender of the child and parental involvement) exerted indirect influence through other variables.

When the nine independent variables were decomposed, four of them exerted 49.87% direct effects and the other five, exerted 50.13% indirect effects on students' achievement in English language.

## **5.2 Conclusion**

In conclusion, this study has demonstrated that some family socio-demographic variables like parents' education, parents' occupation, marital structure and family size have direct causal link to parents' involvement in the provision of basic education. While family socio-demographic factors like parents' income, number of children, gender of the child and parental expectation have indirectly causal link to parents involvement.

Further, this study has demonstrated that some family socio-demographic variables like number of children in the family, parental expectation, parents' education, parents' income and family size significantly exerted both direct and indirect influence on students' achievement in English language. Four variables (parents' education, parents' occupation, gender of the child and parental involvement) exerted indirect influence through other variables.

## **5.3 Implications of Findings**

The findings have shed more light on some of the family socio-demographic variables that affect parents' involvement in the provision of basic education and students' achievement in English language. The findings have useful educational implications for the following group of persons:

### **Ministry of Education**

The ministry of education should consistently encourage parents to become more involved in their children's schooling through enlightenment and not to solely depend on the government for their every need.

Parents should be well remunerate considering the result that parents' income was found significant in impacting both parents' involvement in the provision of basic education and

students' achievement. The ministry should ensure that the salary income of parent are regular an reasonably high.

### **Educational Policy Makers**

Even though education is by no means a quick intervention, it is more permanent and perhaps has more impact on parents' involvement and students' achievement. This is particularly important for educational policy makers that incentive or compensation should be given to those who want to obtain additional education. This is because, it is hard to intervene on parents' educational attainment but if more parents can become better educated; it might lead to better outcomes for children.

Policy makers should enact policies that can make parental involvement mandatory as it is done elsewhere e.g America, Canada. Such policies should be practicable.

### **Parents and Communities**

Although, poverty certainly is a major threat for child development, if parents are successful in providing an emotionally stable and stimulating environment, the negative effects of financial restrictions can be minimized.

Individual parents should be involved in the development of the school which in turn will have a ripple effect on influencing the students' academic achievement if properly channeled. Parents should also find time out of no time to help their wards to learn better after school hours.

### **Parent-Teacher Forum**

Activities of Parent-Teacher Association (PTA) should be encouraged to include volunteering in the school and in decision making. The parents should be involved in monitoring what goes on in the schools. The teachers should be able to encourage parents to make necessary provision for their wards in terms of proper parenting, by seeing to it that they learn at home, and collaborating with the community to improve their wards' academic performance.

### **School Authorities**

The challenges that students of government-owned schools face, especially, at the junior secondary school level cannot be solved by schools alone. Schools should, therefore, adopt strategies to enhance parental involvement in their schools. Teachers, principals, and school counselors should familiarise themselves with the facets of parental involvement that have been observed to be potent in this study and guide parents on what steps they can take to become more involved. These include time-intensive parental involvement activities such as reading to one's children and communicating with them, and making them know their expectations for their wards.

Many parents may not be aware of research findings which reveal that they have a strong influence on their children when they are involved in their academic work. Letting them know this is an important first step. Schools can encourage parents to keep open lines of communication with their wards by creating time to discuss things at home. They can also be made to know that education is important by encouraging them to participate actively in their children's homework and reading activities while at the same time establishing links of familiarity with the teachers of their children.

### **5.4 Suggestion for Further Research**

There is need for replication of the study in other states of the federation using the same and/or other relevant variables at the primary education and secondary education level.

Apart from the eight family socio-demographic factors used here, there are other variables such as home language, parenting style, culture, home environment which are likely to influence parental involvement and students' achievement. Replicating the study using other variables and other subjects at the primary and secondary school level may also be necessary.

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**APPENDIX I**  
**INSTITUTE OF EDUCATION, UNIVERSITY OF IBADAN**  
**PARENTS' QUESTIONNAIRE**

Dear Parent,

This is an instrument designed to get information from parents on their involvement in providing basic education for their children. You have been considered as one of those whose opinion will be of benefit to this study. So, please be honest to provide useful information as required.

The information provided will be strictly used for research work only. All information supplied will be strictly kept in confidence. Your cooperation will be highly appreciated.

Thank you.

**Section A**

Name .....

Name of child/ward .....

**Instruction:** Tick (✓) as applicable

**A. Highest educational qualification**

- |    |                         |         |
|----|-------------------------|---------|
| 1. | No formal schooling     | [     ] |
| 2. | Primary six certificate | [     ] |
| 3. | SC/GCE/O/L              | [     ] |
| 4. | ACE/NCE/Grade II        | [     ] |
| 5. | OND/HND                 | [     ] |
| 6. | First degree            | [     ] |
| 7. | Masters/PhD             | [     ] |
| 8. | Others (Specify) .....  |         |

**B. What is your occupation? .....**

**C. Marital Status**

- |    |   |         |
|----|---|---------|
| a. | Married with spouse (living with husband or wife(wives) | [     ] |
| b. | Single – Parent (living alone)                          | [     ] |

**D. How many wives do you have? .....**

**E. How many children do you have altogether?.....**

How many boys? ..... How many girls? .....

Do you have a child/children in junior secondary school class(es)? Yes[ ] No[ ]

How many? .....

Do you have other relative's child(children) that you are responsible for their schooling?

Yes[ ] No [ ]

If yes how many?

**F. On the average, what is the you Income (per month)? .....**

**G. If you do not receive salary, how much do you take home per day? .....**

**SECTION B  
PERCEPTION OF PROVISION OF BASIC EDUCATION**

Please tick (  ) as applicable

SN	Statement	Strongly disagree	Disagree	Agree	Strongly agree
1.	Provision of basic education should be government's sole responsibility				
2.	There is no need to check children's school work at home				
3.	Fund raising for school's development should be parents' responsibility				
4.	Parents should provide fund for school running for the benefit of their wards				
5.	Parents' involvement in wards' education can influence children positively.				
6.	There is much personal problem to be solved than providing basic education for one's child.				
7.	There is the need to take the education of children seriously.				
8.	Fund provided by the government should be sufficient to run each school.				
9.	Students' performance depends on how the parents support it.				
10.	Concerned parents should not wait for government to provide basic needs for their children to go to school.				
11.	If the parent should help in the provision of necessary school materials, students' performance will be better.				
12.	Supply of furniture should be left to the government alone.				

13.	Teachers alone are capable to influence children's academic performance.				
14.	The importance I place on education makes me participate in providing education.				
15	The gender of the child is important to me				
16	The female child should be given equal opportunity with the male child in education				
17.	The male child should be educated				

### Section C: Parents' expectation on child's performance

How far do you expect your child to go in education?

- i. Finish Junior school level [ ]
- ii. Finish Senior school level [ ]
- iii. Obtain diploma certificate [ ]
- iv. Obtain degree [ ]
- v. Finish Master's degree [ ]
- vi. Finish PhD /MD or other advanced degree [ ]

### Section A- Parenting

SN	Statement	Never	Less Frequently	Frequently	More Frequently
1	Buy books into home's library.				
2.	Provide conducive environment for learning at home e.g. study room with good table and chair.				
3.	Provide first aid box at home.				
4.	Provide medical treatment when child is sick.				
5.	Provide textbooks.				
6.	Provide good nourishing meals for my child.				
7.	Provide adequate clothing for all weathers for my children.				
8.	Provide school materials e.g. uniform, school bag , shoe ,etc.				

### Section B - Communicating

SN	Activities: As a parent I talk to my child's teacher(s)	Never	Occasionally	Often	Always
1	Homework				

2	Students' behaviour in class				
3	Areas for improvement				
4	Assessments tests				
5	Work missed because of absences				
6	Discipline				
7	Help with work in students' weak areas				
8	His/her relationship with friends				

### Section C- Volunteering at school

SN	Activities: As a parent I	Never	Occasionally	Often	Always
1	Help in classroom to teach a subject				
2	Help with special events e.g. end of the year programme.				
3	Help the school to do some photocopies of materials				
4	Help with set-up/clean-up at functions e.g decoration of venue.				
5	Help to provide snacks on special days				
6	Help to provide transportation				
7	Help to make sport wears available				
8	Help to provide computer system				

### SECTION D Learning at home

S/N	Activities: As a Parent I help my children at home	Never	Occasionally	Often	Always
1	With homework				
2.	with reading together				
3	With school projects				
4.	to check homework/ assignments				
5	teach one or more lessons/topics at home				
8	help with study to comprehend				
9	give supplementary work at home				
11	monitor progress through scores				
12	help in organisation of time				
13	hire a teacher/tutor				
14	review school work before examination				
15	help them connect schoolwork with life experiences				

**Section E - Participate in Decision making**

SN	Activities: As a parent I	Never	Less Frequently	Frequently	More frequently
1.	Support school authority in decision making.				
2.	Provide advisory talk when necessary at home.				
3.	Help with fundraising				
4	Hold an office or position in the disciplinary committee				
5	Am member of the building committee				
6	Help to implement rules and regulations of the school				
7	Have a leadership role in the school				
8.	Help to write letters to parents				

**Section F: Parent's activities outside of home**

SN	Activities: As a parent I participate with my children in	Never	Occasionally	Often	Always
1.	field trips				
2	museums/art exhibition				
3	watching drama or plays outside the home				
4	visiting historical sites e.g. Badagry Slavery village, Olumo rock etc.				
5	physical education e.g. sport				
6	watching musical concerts				
7	visiting parks/garden e.g. zoo				
8	watching festival				
9	visiting places of interest e.g. airport, tourist center etc.				
10	Camping				



**APPENDIX II**  
**STUDENTS' ACHIEVEMENT TEST IN ENGLISH LANGUAGE**

**NAME:** .....**CLASS NO:**.....

**SEX: MALE**.....**FEMALE**..... **AGE:**.....

**SCHOOL :**.....

**LOCAL GOVT. AREA**.....

**INSTRUCTION: ANSWER ALL QUESTIONS**

**TIME: 30 MINS**

**SECTION 1: READING COMPREHENSION**

**READ THE FOLLOWING PASSAGE CAREFULLY AND ANSWER THE QUESTIONS BELOW**

Everybody was very excited today, and although there were plenty of hawkers and food sellers, most of the shops closed early, it was the Eyo Festival Day!

I wanted to go to Great Bridge Street in the morning to see the fetish groups performing, but Mummy objected that it was too far, and wouldn't permit me to go. So I stayed at home and, as usual on Saturday mornings, helped in the house. Although I was disappointed, I soon cheered up when Mummy gave me some money for a Fanta and some Akara.

At about four o'clock in the afternoon, crowds began to gather in the streets, and I went out with my brother, Gabriel. In the distance, but coming closer, we could hear the sounds of drumming and singing. Suddenly, at the end of the street, there was a great shout, and people began to scatter in all directions. The masqueraders had arrived!

There were about twenty masqueraders in the first group. When you first see them they are rather frightening. They all wear long flowing white clothes from head to foot. Each one wears a gaily-decorated black hat, and carried a long stick. They are accompanied by people playing drums and various other musical instruments.

When the masqueraders pass there is a tradition that nobody should wear a hat or head-tie. You also have to put away any umbrellas, pipes, or cigarettes. Nobody may ride a bicycle, and you have to keep to the side of the road. There was one poor man who didn't know about these traditions, and kept his hat on. The masqueraders surrounded him and began to beat him. I have never seen anyone run so fast.

## QUESTIONS

1. Why was everyone excited?
  - a. Because shops closed early.
  - b. It is Eyo Festival Day.
  - c. There were plenty hawkers and sellers on the street.
  - d. Because of the noise about.
2. Why didn't Mary go to the Great Bridge? Because .....
  - a. her mother was not around.
  - b. her mother supported her.
  - c. her mother objected.
  - d. her mother permitted her.
3. What are the four rules that people traditionally have to obey during the Eyo Festival
  - a. Nobody should wear a hat or head-tie, put away umbrella, pipes or cigarette, nobody may ride a bicycle and you have to keep to the middle of the road.
  - b. Nobody should wear a hat or head-tie, put away any umbrella, pipe or cigarette, nobody should ride bicycle and you can walk on the road.
  - c. Nobody should wear a hat or head-tie, put away umbrella, pipes or cigarette, and nobody may ride a bicycle.
  - d. Nobody should wear a hat or head-tie, put away umbrella, pipes or cigarette, nobody may ride a bicycle and you have to keep to the side of the road.

## SECTION II

**Choose the correct answer from the alternatives given at the end of the following sentences.**

4. We are all ready? Aren't we?
  - a. No, we are.    b. Yes, we are not.
  - c. Yes, we are.    d. No, we are.
5. It's not raining, is it?
  - a. Yes, it isn't.    b. No, it isn't.
  - c. Yes, it will.    d. No, it is.
6. They didn't find anything, did they?
  - a. No, they did not.    b. No, they did.
  - c. Yes, they did not.    d. Yes, they do not.
7. Have you finished?
  - a. Yes, I has.    b. Yes, I am    c. Yes, I have
  - d. No, I am not.
8. Choose the correct sentence from the options below
  - a. The boy did not like the shirt.
  - b. The boy do no like the shirt.
  - c. The boy does no like the shirt
  - d. The boy do not like the shirt

***The following words all contain the long /i:/ except***

9. (a) leave (b) wheel (c) seat (d) dip

***The following words all contain the /ô/ except***

10. (a) teacher (b) agenda (c) sister (d) pain

***The following words all contain the long /ei/ except***

11. (a) pay (b) pain (c) pen (d) taste  
 12. (a) gate (b) rain (c) tray (d) scent  
 13. (a) way (b) same (c) take (d) data

**Choose the best word for each sentence:**

14. Wounds must be covered with \_\_\_\_\_ .  
 (a) clothes (b) items (c) bandages (d) applications.  
 15. A patient with hypertension has high blood \_\_\_\_\_.  
 (a) pressure (b) count (c) source (d) saline  
 16. A patient who lost a lot of blood may need a blood \_\_\_\_\_.  
 (a) review (b) bank (c) transfusion (d) injection  
 17. After the surgeon had set Bola's broken leg, it was put in \_\_\_\_\_.  
 (a) mortar (b) antiseptic (c) plaster (d) substance

**Complete the blanks with any of these words**

18. \_\_\_\_\_ goals for yourself for each home work session.  
 a. Look b. Read c. Survey d. Set  
 19. Try to \_\_\_\_\_ all the information you come across.  
 a. set b. survey c. remember. d. play  
 20. Don't \_\_\_\_\_ for too long without a break.  
 a. talk b. revise c. work d. relax

**The underlined word is .....**

21. They treated me worse than a dog.  
 a. a noun b. an adjective c. a verb d. a pronoun  
 22. They were in the class when Bode entered. a. verb b. a pronoun c. an adjective  
 d. a noun  
 23. The beautiful girl is from my village.  
 a. a noun b. a verb. c. an adjective d. a pronoun

**From the options A to D choose the word that is most appropriate to fill the spaces**

Taiwo had been feeling ill for three days. His mother therefore took him to the hospital to see the doctor. They got there and sat down with other (24) \_\_\_\_\_. Soon it was their turn, so they entered the consulting room. The doctor took his stethoscope to listen to the sound inside Taiwo's chest. The doctor diagnosed exactly what was wrong with him. He discovered that Taiwo was suffering from malaria and he prescribed some drugs. Taiwo was happy that he was not going to be given (25) \_\_\_\_\_ which he feared much. He was also not to be admitted. His mother was directed to the (26) \_\_\_\_\_ department where they could buy the required drugs.

- |     | A        | B         | C            | D          |
|-----|----------|-----------|--------------|------------|
| 24. | patients | customers | people       | candidates |
| 25. | drug     | a pill    | an injection | a syrup    |
| 26. | X-ray    | pharmacy  | paediatrics  | radiology  |

**LITERATURE IN ENGLISH**

**INSTRUCTION: ANSWER ALL THE QUESTIONS**

27. The three main branches of literature are ....., ....., .....  
 a. prose, criticism and poetry b. climax, dialogue and poetry  
 c. drama, poetry and prose d. dialogue, drama and poetry  
 28. Which of these is not a function of literature? Literature \_\_\_\_\_  
 a. educates b. entertains c. teaches moral lessons d. is for lazy people

POETRY

Read this poem carefully and answer the questions on it

*Knowledge is light  
Ignorance is darkness  
Education confers knowledge  
And knowledge is power;  
Education is the greatest legacy  
Any worthwhile generation can  
Bequeath to its posterity*

29. The poem advises that the youths should be ..... a. beaten well b. sent to prison c. neglected  
d. educated and trained
30. This poem is about the importance of .....  
a. politics b. education c. socialisation d. family life

### APPENDIX III

**Table of Specification for Student's Achievement Test in English Language**

S/N	Content/objectives	Knowledge (Recall)	Understanding	Total
1	Vocabulary development (health and Medicine)	5	10	15
2	Structures	6		6
3	Negation	3		3
4	Tag questions	4		4
5	Spoken English			
	/ð/	4		4
	/ei/	4		4
	/i/	4		4
6	Reading comprehension	5	2	7
7	Parts of speech		4	4
8	Literature in English	5		5
	Poetry		4	4
	<b>Total</b>	40	20	60

**APPENDIX IV**  
**INSTITUTE OF EDUCATION, UNIVERSITY OF IBADAN**  
**IBADAN**

Dear Sir/Ma,

**LETTER OF APPRECIATION AND FOLLOW UP TO VALIDATE PARENT  
QUESTIONNAIRE**

I write to appreciate your effort in filling the Parents' Questionnaire which was sent to you earlier through your child/ward.

Please I will want you to affirm that the questionnaire was dully filled by you by completing the statement below.

I ..... filled the Parent  
Questionnaire brought to me by my child/ward.

.....  
Signature

.....  
Date

Address: .....  
.....  
.....  
.....

Phone No: .....

Thank you for your understanding.

Aderibigbe O. M.

## APPENDIX V

$$\begin{aligned}
 r_{13} &= p_{32r_{12}} \\
 r_{14} &= p_{42r_{12}} + p_{43p_{32r_{12}}} \\
 r_{15} &= p_{51} + p_{52r_{12}} + p_{53p_{32r_{12}}} + p_{54p_{42r_{12}}} + p_{54p_{43p_{32r_{12}}}} \\
 r_{16} &= p_{62r_{12}} + p_{65p_{51}} + p_{65p_{52r_{12}}} + p_{65p_{53p_{32r_{12}}}} + p_{65p_{54p_{42r_{12}}}} + p_{65p_{54p_{43p_{32r_{12}}}}} \\
 r_{17} &= p_{71} + p_{72r_{12}} + p_{75p_{51}} + p_{75p_{52r_{12}}} + p_{75p_{53p_{32r_{12}}}} + p_{75p_{54p_{42r_{12}}}} + p_{75p_{54p_{43p_{32r_{12}}}}} + \\
 &\quad p_{76p_{62r_{12}}} + p_{76p_{65p_{51}}} + p_{76p_{65p_{52r_{12}}}} + p_{76p_{65p_{53p_{32r_{12}}}}} + p_{76p_{65p_{54p_{42r_{12}}}}} + \\
 &\quad p_{76p_{65p_{54p_{43p_{32r_{12}}}}} \\
 r_{18} &= p_{81} + p_{82r_{12}} + p_{83p_{32r_{12}}} + p_{84p_{42r_{12}}} + p_{84p_{43p_{32r_{12}}}} + p_{85p_{51}} + p_{85p_{52r_{12}}} + p_{85p_{53p_{32r_{12}}}} + \\
 &\quad p_{85p_{54p_{42r_{12}}}} + p_{85p_{54p_{43p_{32r_{12}}}}} + p_{86p_{62r_{12}}} + p_{86p_{65p_{51}}} + p_{86p_{65p_{52r_{12}}}} + p_{86p_{65p_{53p_{32r_{12}}}}} + \\
 &\quad p_{86p_{65p_{54p_{42r_{12}}}}} + p_{86p_{65p_{54p_{43p_{32r_{12}}}}} \\
 r_{19} &= p_{91} + p_{92r_{12}} + p_{93p_{32r_{12}}} + p_{94p_{42r_{12}}} + p_{94p_{43p_{32r_{12}}}} + p_{95p_{51}} + p_{95p_{52r_{12}}} + p_{95p_{53p_{32r_{12}}}} + \\
 &\quad p_{95p_{54p_{42r_{12}}}} + p_{95p_{54p_{43p_{32r_{12}}}}} + p_{96p_{62r_{12}}} + p_{96p_{65p_{51}}} + p_{96p_{65p_{52r_{12}}}} + p_{96p_{65p_{53p_{32r_{12}}}}} + \\
 &\quad p_{96p_{65p_{54p_{42r_{12}}}}} + p_{96p_{65p_{54p_{43p_{32r_{12}}}}} \\
 r_{1t} &= p_{12r_{12}} + p_{14} p_{42r_{12}} + p_{14p_{43p_{32r_{12}}}} + p_{15} p_{51} + p_{15p_{52r_{12}}} + p_{15p_{53p_{32r_{12}}}} + p_{15p_{54p_{42r_{12}}}} + p_{15} \\
 &\quad p_{54p_{43p_{32r_{12}}}} + p_{16} p_{62r_{12}} + p_{16p_{65p_{51}}} + p_{16p_{65p_{52r_{12}}}} + p_{16p_{65p_{53p_{32r_{12}}}}} + p_{16} p_{65p_{54p_{42r_{12}}}} + \\
 &\quad p_{16p_{65p_{54p_{43p_{32r_{12}}}}} + p_{18} p_{81} + p_{18} p_{82r_{12}} + p_{18p_{83p_{32r_{12}}}} + p_{18} p_{84p_{42r_{12}}} + p_{18} p_{84p_{43p_{32r_{12}}}} + \\
 &\quad p_{18} p_{85p_{51}} + p_{18p_{85p_{52r_{12}}}} + p_{18} p_{85p_{53p_{32r_{12}}}} + p_{18p_{85p_{54p_{42r_{12}}}}} + p_{18p_{85p_{54p_{43p_{32r_{12}}}}} + \\
 &\quad p_{18p_{86p_{62r_{12}}}} + p_{18p_{86p_{65p_{51}}}} + p_{18} p_{86p_{65p_{52r_{12}}}} + p_{18p_{86p_{65p_{53p_{32r_{12}}}}} + p_{18} p_{86p_{65p_{54p_{42r_{12}}}}} + \\
 &\quad p_{86p_{65p_{54p_{43p_{32r_{12}}}}} \\
 r_{23} &= p_{32} \\
 r_{24} &= p_{42} + p_{43p_{32}} \\
 r_{25} &= p_{51r_{12}} + p_{52} + p_{53p_{32}} \\
 r_{26} &= p_{65p_{51r_{12}}} + p_{65p_{52}} + p_{65p_{53p_{32}}} \\
 r_{27} &= p_{71r_{12}} + p_{72} + p_{75p_{51r_{12}}} + p_{75p_{52}} + p_{75p_{53p_{32}}} + p_{76} p_{65p_{51r_{12}}} + p_{76p_{65p_{52}}} + p_{76p_{65p_{53p_{32}}}} \\
 r_{28} &= p_{81r_{12}} + p_{82} + p_{84p_{42}} + p_{84p_{43p_{32}}} + p_{85} p_{51r_{12}} + p_{85p_{52}} + p_{85p_{53p_{32}}} + p_{86p_{65p_{51r_{12}}}} + p_{86} \\
 &\quad p_{65p_{52}} + p_{86p_{65p_{53p_{32}}}} \\
 r_{29} &= p_{91r_{12}} + p_{92} + p_{93p_{32}} + p_{96} p_{65p_{51r_{12}}} + p_{96p_{65p_{52}}} + p_{96p_{65p_{53p_{32}}}} \\
 r_{2t} &= p_{12} + p_{14} p_{42} + p_{14p_{43p_{32}}} + p_{15p_{51r_{12}}} + p_{15p_{52}} + p_{15p_{53p_{32}}} + p_{16} p_{65p_{51r_{12}}} + p_{16p_{65p_{52}}} + \\
 &\quad p_{16p_{65p_{53p_{32}}}} + p_{18p_{81r_{12}}} + p_{18p_{82}} + p_{18p_{84p_{42}}} + p_{18p_{84p_{43p_{32}}}} + p_{18p_{85} p_{51r_{12}}} + p_{18p_{85p_{52}}} + \\
 &\quad p_{18p_{85p_{53p_{32}}}} + p_{18p_{86p_{65p_{51r_{12}}}}} + p_{18p_{86} p_{65p_{52}}} + p_{18p_{86p_{65p_{53p_{32}}}}} \\
 r_{34} &= p_{42p_{32r_{12}}} + p_{43} \\
 r_{35} &= p_{51p_{32r_{12}}} + p_{52p_{32}} + p_{53} \\
 r_{36} &= p_{65} p_{51p_{32r_{12}}} + p_{65p_{52p_{32}}} + p_{65p_{53}} \\
 r_{37} &= p_{71p_{32r_{12}}} + p_{72p_{32}} + p_{75p_{51p_{32r_{12}}}} + p_{75p_{52p_{32}}} + p_{75p_{53}} + p_{76} p_{65} p_{51p_{32r_{12}}} + p_{76p_{65p_{52p_{32}}}} \\
 &\quad + p_{76p_{65p_{53}}} \\
 r_{38} &= p_{81p_{32r_{12}}} + p_{82p_{32}} + p_{84p_{42p_{32r_{12}}}} + p_{84p_{43}} \\
 r_{39} &= p_{91p_{32r_{12}}} + p_{92p_{32}} + p_{93} + p_{96p_{65p_{51p_{32r_{12}}}}} + p_{96p_{65p_{52p_{32}}}} + p_{96p_{65p_{53}}} \\
 r_{3t} &= p_{12p_{32}} + p_{14} p_{42p_{32r_{12}}} + p_{14p_{43}} + p_{15p_{51p_{32r_{12}}}} + p_{15p_{52p_{32}}} + p_{15p_{53}} + p_{16} p_{65} p_{51p_{32r_{12}}} + \\
 &\quad p_{16p_{65p_{52p_{32}}}} + p_{16p_{65p_{53}}} \\
 r_{45} &= p_{51p_{42r_{12}}} + p_{51p_{43p_{32r_{12}}}} + p_{52p_{42}} + p_{52p_{43p_{32}}} + p_{53p_{42p_{32r_{12}}}} + p_{53p_{43}} \\
 r_{46} &= p_{65} p_{51p_{42r_{12}}} + p_{65p_{51p_{43p_{32r_{12}}}}} + p_{65p_{52p_{42}}} + p_{65p_{52p_{43p_{32}}}} + p_{65p_{53p_{42p_{32r_{12}}}}} + p_{65p_{53p_{43}}}
 \end{aligned}$$

$$\begin{aligned}
r_{47} &= p_{71}p_{42}r_{12} + p_{71}p_{43}p_{32}r_{12} + p_{72}p_{42} + p_{72}p_{43}p_{32} + p_{75}p_{51}p_{42}r_{12} + p_{75}p_{51}p_{43}p_{32}r_{12} + \\
& p_{75}p_{52}p_{42} + p_{75}p_{52}p_{43}p_{32} + p_{75}p_{53}p_{42}p_{32}r_{12} + p_{75}p_{53}p_{43} + p_{76}p_{65}p_{51}p_{42}r_{12} + \\
& p_{76}p_{65}p_{51}p_{43}p_{32}r_{12} + p_{76}p_{65}p_{52}p_{42} + p_{76}p_{65}p_{52}p_{43}p_{32} + p_{76}p_{65}p_{53}p_{42}p_{32}r_{12} + p_{76}p_{65}p_{53}p_{43} \\
r_{48} &= p_{81}p_{42}r_{12} + p_{81}p_{43}p_{32}r_{12} + p_{82}p_{42} + p_{82}p_{43}p_{32} + p_{84} + p_{85} p_{51}p_{42}r_{12} + p_{85}p_{51}p_{43}p_{32}r_{12} + \\
& p_{85}p_{52}p_{42} + p_{85}p_{52}p_{43}p_{32} + p_{85}p_{53}p_{42}p_{32}r_{12} + p_{85}p_{53}p_{43} + p_{86}p_{65}p_{51}p_{42}r_{12} + \\
& p_{86}p_{65}p_{51}p_{43}p_{32}r_{12} + p_{86}p_{65}p_{52}p_{42} + p_{86}p_{65}p_{52}p_{43}p_{32} + p_{86}p_{65}p_{53}p_{42}p_{32}r_{12} + p_{86}p_{65}p_{53}p_{43} \\
r_{49} &= p_{91}p_{42}r_{12} + p_{91}p_{43}p_{32}r_{12} + p_{92}p_{42} + p_{92}p_{43}p_{32} + p_{93}p_{42}p_{32}r_{12} + p_{93}p_{43} + p_{96}p_{65} p_{51}p_{42}r_{12} \\
& + p_{96}p_{65}p_{51}p_{43}p_{32}r_{12} + p_{96}p_{65}p_{52}p_{42} + p_{96}p_{65}p_{52}p_{43}p_{32} + p_{96}p_{65}p_{53}p_{42}p_{32}r_{12} + \\
& p_{96}p_{65}p_{53}p_{43} \\
r_{4t} &= p_{i2}p_{42} + p_{i2}p_{43}p_{32} + p_{i4} + p_{i5}p_{51}p_{42}r_{12} + p_{i5}p_{51}p_{42}r_{12} + p_{i5}p_{51}p_{43}p_{32}r_{12} + p_{i5}p_{52}p_{42} + \\
& p_{i5}p_{52}p_{43}p_{32} + p_{i5}p_{53}p_{42}p_{32}r_{12} + p_{i5}p_{53}p_{43} + p_{i6}p_{65}p_{51}p_{42}r_{12} + p_{i6}p_{65}p_{51}p_{43}p_{32}r_{12} + \\
& p_{i6}p_{65}p_{52}p_{42} + p_{i6}p_{65}p_{52}p_{43}p_{32} + p_{i6}p_{65}p_{53}p_{42}p_{32}r_{12} + p_{i6}p_{65}p_{53}p_{43} + p_{i8} p_{81}p_{42}r_{12} + \\
& p_{i8}p_{81}p_{43}p_{32}r_{12} + p_{i8}p_{82}p_{42} + p_{i8}p_{82}p_{43}p_{32} + p_{i8}p_{84} + p_{i8}p_{85} p_{51}p_{42}r_{12} + p_{i8}p_{85}p_{51}p_{43}p_{32}r_{12} \\
& + p_{i8}p_{85}p_{52}p_{42} + p_{i8}p_{85}p_{52}p_{43}p_{32} + p_{i8}p_{85}p_{53}p_{42}p_{32}r_{12} + p_{i8}p_{85}p_{53}p_{43} + p_{i8}p_{86}p_{65}p_{51}p_{42}r_{12} \\
& + p_{i8}p_{86}p_{65}p_{51}p_{43}p_{32}r_{12} + p_{i8}p_{86}p_{65}p_{52}p_{42} + p_{i8}p_{86}p_{65}p_{52}p_{43}p_{32} + p_{i8}p_{86}p_{65}p_{53}p_{42}p_{32}r_{12} + \\
& p_{i8}p_{86}p_{65}p_{53}p_{43} \\
r_{56} &= p_{65} \\
r_{57} &= p_{71}p_{51} + p_{71}p_{52}r_{12} + p_{71}p_{53}p_{32}r_{12} + p_{71}p_{54}p_{43}r_{12} + p_{71}p_{53}p_{43}p_{32}r_{12} + p_{72}p_{51}r_{12} + p_{72}p_{52} + \\
& p_{72}p_{52}p_{32} + p_{76}p_{65} \\
r_{58} &= p_{81}p_{51} + p_{81}p_{53}p_{32}r_{12} + p_{81}p_{54}p_{42}r_{12} + p_{81}p_{54}p_{43}p_{32}r_{12} + p_{82} p_{51}r_{12} + p_{82}p_{52} + \\
& p_{82}p_{53}p_{32} + p_{84}p_{51}p_{42}r_{12} + p_{84}p_{51}p_{43}p_{32}r_{12} + p_{84}p_{52}p_{42} + p_{84}p_{52}p_{43}p_{32} + p_{84}p_{53}p_{42}p_{32}r_{12} \\
& + p_{84}p_{53}p_{43} + p_{85} + p_{86}p_{65} \\
r_{59} &= p_{91}p_{51} + p_{91}p_{52}r_{12} + p_{91}p_{53}p_{32}r_{12} + p_{91}p_{54}p_{42}r_{12} + p_{91}p_{54}p_{43}p_{32}r_{12} + p_{92} p_{51}r_{12} + p_{92}p_{52} + \\
& p_{92}p_{53}p_{32} + p_{93}p_{51}p_{32}r_{12} + p_{93}p_{52}p_{32} + p_{93}p_{53} + p_{96}p_{65} \\
r_{5t} &= p_{i2}p_{51}r_{12} + p_{i2}p_{52} + p_{i2}p_{53}p_{32} + p_{i4}p_{51}p_{42}r_{12} + p_{i4}p_{51}p_{43}p_{32}r_{12} + p_{i4}p_{52}p_{42} + p_{i4}p_{52}p_{43}p_{32} + \\
& p_{i4}p_{53}p_{42}p_{32}r_{12} + p_{i4}p_{53}p_{43} + p_{i5} + p_{i6}p_{65} + p_{i8}p_{81}p_{51} + p_{i8}p_{81}p_{53}p_{32}r_{12} + \\
& p_{i8}p_{81}p_{54}p_{42}r_{12} + p_{i8}p_{81}p_{54}p_{43}p_{32}r_{12} + p_{i8}p_{82}p_{51}r_{12} + p_{i8}p_{82}p_{52} + p_{i8}p_{82}p_{53}p_{32} + \\
& p_{i8}p_{84}p_{51}p_{42}r_{12} + p_{i8} p_{84}p_{51}p_{43}p_{32}r_{12} + p_{i8}p_{84}p_{52}p_{42} + p_{i8}p_{84}p_{52}p_{43}p_{32} + p_{i8}p_{84}p_{53}p_{42}p_{32}r_{12} \\
& + p_{i8}p_{84}p_{53}p_{43} + p_{i8}p_{85} + p_{i8}p_{86}p_{65} \\
r_{67} &= p_{71}p_{62}r_{12} + p_{71}p_{65}p_{51} + p_{71}p_{65}p_{52}r_{12} + p_{71}p_{65}p_{53}p_{32}r_{12} + p_{71}p_{65}p_{54}p_{42}r_{12} + \\
& p_{71}p_{65}p_{54}p_{43}p_{32}r_{12} + p_{72}p_{65}p_{51}r_{12} + p_{72}p_{65}p_{52} + p_{72}p_{65}p_{53}p_{32} + p_{75}p_{65} + p_{76} \\
r_{68} &= p_{81}p_{62}r_{12} + p_{81}p_{65}p_{51} + p_{81}p_{65}p_{52}r_{12} + p_{81}p_{65}p_{53}p_{32}r_{12} + p_{81}p_{65}p_{54}p_{42}r_{12} + \\
& p_{81}p_{65}p_{54}p_{43}p_{32}r_{12} + p_{82}p_{65}p_{51}r_{12} + p_{82}p_{65}p_{52} + p_{82}p_{65}p_{53}p_{32} + p_{84}p_{65} p_{51}p_{42}r_{12} + \\
& p_{84}p_{65}p_{51}p_{43}p_{32}r_{12} + p_{84}p_{65}p_{52}p_{42} + p_{84}p_{65}p_{52}p_{43}p_{32} + p_{84}p_{65}p_{53}p_{42}p_{32}r_{12} + p_{84}p_{65}p_{53}p_{43} \\
& + p_{85}p_{65} + p_{86} \\
r_{69} &= p_{91}p_{62}r_{12} + p_{91}p_{65}p_{51} + p_{91}p_{65}p_{52}r_{12} + p_{91}p_{65}p_{53}p_{32}r_{12} + p_{91}p_{65}p_{54}p_{42}r_{12} + \\
& p_{91}p_{65}p_{54}p_{43}p_{32}r_{12} p_{91} + p_{92}p_{65}p_{51}r_{12} + p_{92}p_{65}p_{52} + p_{92}p_{65}p_{53}p_{32} + p_{93}p_{65} p_{51}p_{32}r_{12} + \\
& p_{93}p_{65}p_{52}p_{32} + p_{93}p_{65}p_{53} + p_{96} \\
r_{6t} &= p_{i2}p_{65}p_{51}r_{12} + p_{i2}p_{65}p_{52} + p_{i2}p_{65}p_{53}p_{32} + p_{i4}p_{65} p_{51}p_{42}r_{12} + p_{i4}p_{65}p_{51}p_{43}p_{32}r_{12} + \\
& p_{i4}p_{65}p_{52}p_{42} + p_{i4}p_{65}p_{52}p_{43}p_{32} + p_{i4}p_{65}p_{53}p_{42}p_{32}r_{12} + p_{i4}p_{65}p_{53}p_{43} + p_{i5}p_{65} + p_{i8}p_{81}p_{62}r_{12} \\
& + p_{i8}p_{81}p_{65}p_{51} + p_{i8}p_{81}p_{65}p_{52}r_{12} + p_{i8}p_{81}p_{65}p_{53}p_{32}r_{12} + p_{i8}p_{81}p_{65}p_{54}p_{42}r_{12} + \\
& p_{i8}p_{81}p_{65}p_{54}p_{43}p_{32}r_{12} + p_{i8}p_{82}p_{65}p_{51}r_{12} + p_{i8}p_{82}p_{65}p_{52} + p_{i8}p_{82}p_{65}p_{53}p_{32} + p_{i8}p_{84}p_{65} \\
& p_{51}p_{42}r_{12} + p_{i8}p_{84}p_{65}p_{51}p_{43}p_{32}r_{12} + p_{i8}p_{84}p_{65}p_{52}p_{42} + p_{i8}p_{84}p_{65}p_{52}p_{43}p_{32} + \\
& p_{i8}p_{84}p_{65}p_{53}p_{42}p_{32}r_{12} + p_{i8}p_{84}p_{65}p_{53}p_{43} + p_{i8}p_{85}p_{65} + p_{i8}p_{86} \\
r_{78} &= p_{81} p_{71} + p_{81}p_{72}r_{12} + p_{81}p_{75}p_{51} + p_{81}p_{75}p_{52}r_{12} + p_{81}p_{75}p_{53}p_{32}r_{12} + p_{81}p_{75}p_{54}p_{42}r_{12} + \\
& p_{81}p_{75}p_{54}p_{43}p_{32}r_{12} + p_{81}p_{76}p_{62}r_{12} + p_{81}p_{76}p_{65}p_{51} + p_{81}p_{76}p_{65}p_{52}r_{12} + p_{81}p_{76}p_{65}p_{53}p_{32}r_{12} +
\end{aligned}$$



$$\begin{aligned}
& p_{81}p_{76}p_{65}p_{54}p_{42}r_{12} + p_{81}p_{76}p_{65}p_{53}p_{43}p_{32}r_{12} + p_{82}p_{71}r_{12} + p_{82}p_{72} + p_{82}p_{75}p_{51}r_{12} + \\
& p_{82}p_{75}p_{52} + p_{82}p_{75}p_{53}p_{32} + p_{82}p_{76}p_{65}p_{51}r_{12} + p_{82}p_{76}p_{65}p_{52} + p_{82}p_{76}p_{65}p_{53}p_{32} + \\
& p_{84}p_{71}p_{42}r_{12} + p_{84}p_{71}p_{43}p_{32}r_{12} + p_{84}p_{72}p_{42} + p_{84}p_{72}p_{43}p_{32} + p_{84}p_{75}p_{51}p_{42}r_{12} + \\
& p_{84}p_{75}p_{51}p_{43}p_{32}r_{12} + p_{84}p_{75}p_{52}p_{42} + p_{84}p_{75}p_{52}p_{43}p_{32} + p_{84}p_{75}p_{53}p_{42}p_{32}r_{12} + p_{84}p_{75}p_{53}p_{43} \\
& + p_{84}p_{76}p_{65}p_{51}p_{42}r_{12} + p_{84}p_{76}p_{65}p_{51}p_{43}p_{32}r_{12} + p_{84}p_{76}p_{65}p_{52}p_{42} + p_{84}p_{76}p_{65}p_{52}p_{43}p_{32} + \\
& p_{84}p_{76}p_{65}p_{53}p_{42}p_{32}r_{12} + p_{84}p_{76}p_{65}p_{53}p_{43} + p_{85}p_{71}p_{51} + p_{85}p_{71}p_{52}r_{12} + p_{85}p_{71}p_{53}p_{32}r_{12} + \\
& p_{85}p_{71}p_{54}p_{43}r_{12} + p_{85}p_{71}p_{53}p_{43}p_{32}r_{12} + p_{85}p_{72}p_{51}r_{12} + p_{85}p_{72}p_{52} + p_{85}p_{72}p_{52}p_{32} + \\
& p_{85}p_{76}p_{65} + p_{86}p_{71}p_{62}r_{12} + p_{86}p_{71}p_{65}p_{51} + p_{86}p_{71}p_{65}p_{52}r_{12} + p_{86}p_{71}p_{65}p_{53}p_{32}r_{12} + \\
& p_{86}p_{71}p_{65}p_{54}p_{42}r_{12} + p_{86}p_{71}p_{65}p_{54}p_{43}p_{32}r_{12} + p_{86}p_{72}p_{65}p_{51}r_{12} + p_{86}p_{72}p_{65}p_{52} + \\
& p_{86}p_{72}p_{65}p_{53}p_{32} + p_{86}p_{75}p_{65} + p_{86}p_{76} \\
r_{79} = & p_{91}p_{71} + p_{91}p_{72}r_{12} + p_{91}p_{75}p_{51} + p_{91}p_{75}p_{52}r_{12} + p_{91}p_{75}p_{53}p_{32}r_{12} + p_{91}p_{75}p_{54}p_{42}r_{12} + \\
& p_{91}p_{75}p_{54}p_{43}p_{32}r_{12} + p_{91}p_{76}p_{62}r_{12} + p_{91}p_{76}p_{65}p_{51} + p_{91}p_{76}p_{65}p_{52}r_{12} + p_{91}p_{76}p_{65}p_{53}p_{32}r_{12} + \\
& p_{91}p_{76}p_{65}p_{54}p_{42}r_{12} + p_{91}p_{76}p_{65}p_{53}p_{43}p_{32}r_{12} + p_{92}p_{71}r_{12} + p_{92}p_{72} + p_{92}p_{75}p_{51}r_{12} + \\
& p_{92}p_{75}p_{52} + p_{92}p_{75}p_{53}p_{32} + p_{92}p_{76}p_{65}p_{51}r_{12} + p_{92}p_{76}p_{65}p_{52} + p_{92}p_{76}p_{65}p_{53}p_{32} + \\
& p_{96}p_{71}p_{62}r_{12} + p_{96}p_{71}p_{65}p_{51} + p_{96}p_{71}p_{65}p_{52}r_{12} + p_{96}p_{71}p_{65}p_{53}p_{32}r_{12} + p_{96}p_{71}p_{65}p_{54}p_{42}r_{12} + \\
& p_{96}p_{71}p_{65}p_{54}p_{43}p_{32}r_{12} + p_{96}p_{72}p_{65}p_{51}r_{12} + p_{96}p_{72}p_{65}p_{52} + p_{96}p_{72}p_{65}p_{53}p_{32} + p_{96}p_{75}p_{65} + \\
& p_{96}p_{76} \\
r_{7t} = & p_{i2}p_{71}r_{12} + p_{i2}p_{72} + p_{i2}p_{75}p_{51}r_{12} + p_{i2}p_{75}p_{52} + p_{i2}p_{75}p_{53}p_{32} + p_{i2}p_{76}p_{65}p_{51}r_{12} + \\
& p_{i2}p_{76}p_{65}p_{52} + p_{i2}p_{76}p_{65}p_{53}p_{32} + p_{i4}p_{71}p_{42}r_{12} + p_{i4}p_{71}p_{43}p_{32}r_{12} + p_{i4}p_{72}p_{42} + p_{i4}p_{72}p_{43}p_{32} \\
& + p_{i4}p_{75}p_{51}p_{42}r_{12} + p_{i4}p_{75}p_{51}p_{43}p_{32}r_{12} + p_{i4}p_{75}p_{52}p_{42} + p_{i4}p_{75}p_{52}p_{43}p_{32} + \\
& p_{i4}p_{75}p_{53}p_{42}p_{32}r_{12} + p_{i4}p_{75}p_{53}p_{43} + p_{i4}p_{76}p_{65}p_{51}p_{42}r_{12} + p_{i4}p_{76}p_{65}p_{51}p_{43}p_{32}r_{12} + \\
& p_{i4}p_{76}p_{65}p_{52}p_{42} + p_{i4}p_{76}p_{65}p_{52}p_{43}p_{32} + p_{i4}p_{76}p_{65}p_{53}p_{42}p_{32}r_{12} + p_{i4}p_{76}p_{65}p_{53}p_{43} + p_{i5}p_{71}p_{51} \\
& + p_{i5}p_{71}p_{52}r_{12} + p_{i5}p_{71}p_{53}p_{32}r_{12} + p_{i5}p_{71}p_{54}p_{43}r_{12} + p_{i5}p_{71}p_{53}p_{43}p_{32}r_{12} + p_{i5}p_{72}p_{51}r_{12} + \\
& p_{i5}p_{72}p_{52} + p_{i5}p_{72}p_{52}p_{32} + p_{i5}p_{76}p_{65} + p_{i6}p_{71}p_{62}r_{12} + p_{i6}p_{71}p_{65}p_{51} + p_{i6}p_{71}p_{65}p_{52}r_{12} + \\
& p_{i6}p_{71}p_{65}p_{53}p_{32}r_{12} + p_{i6}p_{71}p_{65}p_{54}p_{42}r_{12} + p_{i6}p_{71}p_{65}p_{54}p_{43}p_{32}r_{12} + p_{i6}p_{72}p_{65}p_{51}r_{12} + \\
& p_{i6}p_{72}p_{65}p_{52} + p_{i6}p_{72}p_{65}p_{53}p_{32} + p_{i6}p_{75}p_{65} + p_{i6}p_{76} + p_{i8}p_{81}p_{71} + p_{i8}p_{81}p_{72}r_{12} + \\
& p_{i8}p_{81}p_{75}p_{51} + p_{i8}p_{81}p_{75}p_{52}r_{12} + p_{i8}p_{81}p_{75}p_{53}p_{32}r_{12} + p_{i8}p_{81}p_{75}p_{54}p_{42}r_{12} + \\
& p_{i8}p_{81}p_{75}p_{54}p_{43}p_{32}r_{12} + p_{i8}p_{81}p_{76}p_{62}r_{12} + p_{i8}p_{81}p_{76}p_{65}p_{51} + p_{i8}p_{81}p_{76}p_{65}p_{52}r_{12} + \\
& p_{i8}p_{81}p_{76}p_{65}p_{53}p_{32}r_{12} + p_{i8}p_{81}p_{76}p_{65}p_{54}p_{42}r_{12} + p_{i8}p_{81}p_{76}p_{65}p_{53}p_{43}p_{32}r_{12} + p_{i8}p_{82}p_{71}r_{12} + \\
& p_{i8}p_{82}p_{72} + p_{i8}p_{82}p_{75}p_{51}r_{12} + p_{i8}p_{82}p_{75}p_{52} + p_{i8}p_{82}p_{75}p_{53}p_{32} + p_{i8}p_{82}p_{76}p_{65}p_{51}r_{12} + \\
& p_{i8}p_{82}p_{76}p_{65}p_{52} + p_{i8}p_{82}p_{76}p_{65}p_{53}p_{32} + p_{i8}p_{84}p_{71}p_{42}r_{12} + p_{i8}p_{84}p_{71}p_{43}p_{32}r_{12} + p_{i8}p_{84}p_{72}p_{42} \\
& + p_{i8}p_{84}p_{72}p_{43}p_{32} + p_{i8}p_{84}p_{75}p_{51}p_{42}r_{12} + p_{i8}p_{84}p_{75}p_{51}p_{43}p_{32}r_{12} + p_{i8}p_{84}p_{75}p_{52}p_{42} + \\
& p_{i8}p_{84}p_{75}p_{52}p_{43}p_{32} + p_{i8}p_{84}p_{75}p_{53}p_{42}p_{32}r_{12} + p_{i8}p_{84}p_{75}p_{53}p_{43} + p_{i8}p_{84}p_{76}p_{65}p_{51}p_{42}r_{12} + \\
& p_{i8}p_{84}p_{76}p_{65}p_{51}p_{43}p_{32}r_{12} + p_{i8}p_{84}p_{76}p_{65}p_{52}p_{42} + p_{i8}p_{84}p_{76}p_{65}p_{52}p_{43}p_{32} + \\
& p_{i8}p_{84}p_{76}p_{65}p_{53}p_{42}p_{32}r_{12} + p_{i8}p_{84}p_{76}p_{65}p_{53}p_{43} + p_{i8}p_{85}p_{71}p_{51} + p_{i8}p_{85}p_{71}p_{52}r_{12} + \\
& p_{i8}p_{85}p_{71}p_{53}p_{32}r_{12} + p_{i8}p_{85}p_{71}p_{54}p_{43}r_{12} + p_{i8}p_{85}p_{71}p_{53}p_{43}p_{32}r_{12} + p_{i8}p_{85}p_{72}p_{51}r_{12} + \\
& p_{i8}p_{85}p_{72}p_{52} + p_{i8}p_{85}p_{72}p_{52}p_{32} + p_{i8}p_{85}p_{76}p_{65} + p_{i8}p_{86}p_{71}p_{62}r_{12} + p_{i8}p_{86}p_{71}p_{65}p_{51} + \\
& p_{i8}p_{86}p_{71}p_{65}p_{52}r_{12} + p_{i8}p_{86}p_{71}p_{65}p_{53}p_{32}r_{12} + p_{i8}p_{86}p_{71}p_{65}p_{54}p_{42}r_{12} + \\
& p_{i8}p_{86}p_{71}p_{65}p_{54}p_{43}p_{32}r_{12} + p_{i8}p_{86}p_{72}p_{65}p_{51}r_{12} + p_{i8}p_{86}p_{72}p_{65}p_{52} + p_{i8}p_{86}p_{72}p_{65}p_{53}p_{32} + \\
& p_{i8}p_{86}p_{75}p_{65} + p_{i8}p_{86}p_{76} \\
r_{89} = & p_{91}p_{81} + p_{91}p_{82}r_{12} + p_{91}p_{83}p_{32}r_{12} + p_{91}p_{84}p_{42}r_{12} + p_{91}p_{84}p_{43}p_{32}r_{12} + p_{91}p_{85}p_{51} + \\
& p_{91}p_{85}p_{52}r_{12} + p_{91}p_{85}p_{53}p_{32}r_{12} + p_{91}p_{85}p_{54}p_{42}r_{12} + p_{91}p_{85}p_{54}p_{43}p_{32}r_{12} + p_{91}p_{86}p_{62}r_{12} + \\
& p_{91}p_{86}p_{65}p_{51} + p_{91}p_{86}p_{65}p_{52}r_{12} + p_{91}p_{86}p_{65}p_{53}p_{32}r_{12} + p_{91}p_{86}p_{65}p_{54}p_{42}r_{12} + \\
& p_{91}p_{86}p_{65}p_{54}p_{43}p_{32}r_{12} + p_{92}p_{81}r_{12} + p_{92}p_{82} + p_{92}p_{84}p_{42} + p_{92}p_{84}p_{43}p_{32} + p_{92}p_{85}p_{51}r_{12} + \\
& p_{92}p_{85}p_{52} + p_{92}p_{85}p_{53}p_{32} + p_{92}p_{86}p_{65}p_{51}r_{12} + p_{92}p_{86}p_{65}p_{52} + p_{92}p_{86}p_{65}p_{53}p_{32} + \\
& p_{93}p_{81}p_{32}r_{12} + p_{93}p_{82}p_{32} + p_{93}p_{84}p_{42}p_{32}p_{r12} + p_{93}p_{84}p_{43} + p_{96}p_{81}p_{62}r_{12} + p_{96}p_{81}p_{65}p_{51} +
\end{aligned}$$

$$\begin{aligned}
& p_{96}p_{81}p_{65}p_{52}r_{12} + p_{96}p_{81}p_{65}p_{53}p_{32}r_{12} + p_{96}p_{81}p_{65}p_{54}p_{42}r_{12} + p_{96}p_{81}p_{65}p_{54}p_{43}p_{32}r_{12} + \\
& p_{96}p_{82}p_{65}p_{51}r_{12} + p_{96}p_{82}p_{65}p_{52} + p_{96}p_{82}p_{65}p_{53}p_{32} + p_{96}p_{84}p_{65}p_{51}p_{42}r_{12} + \\
& p_{96}p_{84}p_{65}p_{51}p_{43}p_{32}r_{12} + p_{96}p_{84}p_{65}p_{52}p_{42} + p_{96}p_{84}p_{65}p_{52}p_{43}p_{32} + p_{96}p_{84}p_{65}p_{53}p_{42}p_{32}r_{12} + \\
& p_{96}p_{84}p_{65}p_{53}p_{43} + p_{96}p_{85}p_{65} + p_{96}p_{86} \\
r_{8t} = & p_{t2} p_{81}r_{12} + p_{t2}p_{82} + p_{t2}p_{84}p_{42} + p_{t2}p_{84}p_{43}p_{32} + p_{t2}p_{85}p_{51}r_{12} + p_{t2}p_{85}p_{52} + p_{t2}p_{85}p_{53}p_{32} + \\
& p_{t2}p_{86}p_{65}p_{51}r_{12} + p_{t2}p_{86}p_{65}p_{52} + p_{t2}p_{86}p_{65}p_{53}p_{32} + p_{t4}p_{81}p_{42}r_{12} + p_{t4}p_{81}p_{43}p_{32}r_{12} + \\
& p_{t4}p_{82}p_{42} + p_{t4}p_{82}p_{43}p_{32} + p_{t4}p_{84} + p_{t4}p_{85}p_{51}p_{42}r_{12} + p_{t4}p_{85}p_{51}p_{43}p_{32}r_{12} + p_{t4}p_{85}p_{52}p_{42} + \\
& p_{t4}p_{85}p_{52}p_{43}p_{32} + p_{t4}p_{85}p_{53}p_{42}p_{32}r_{12} + p_{t4}p_{85}p_{53}p_{43} + p_{t4}p_{86}p_{65}p_{51}p_{42}r_{12} + \\
& p_{t4}p_{86}p_{65}p_{51}p_{43}p_{32}r_{12} + p_{t4}p_{86}p_{65}p_{52}p_{42} + p_{t4}p_{86}p_{65}p_{52}p_{43}p_{32} + p_{t4}p_{86}p_{65}p_{53}p_{42}p_{32}r_{12} + \\
& p_{t4}p_{86}p_{65}p_{53}p_{43} + p_{t5}p_{81}p_{51} + p_{t5}p_{8153}p_{32}r_{12} + p_{t5}p_{81}p_{54}p_{42}r_{12} + p_{t5}p_{81}p_{54}p_{43}p_{32}r_{12} + \\
& p_{t5}p_{82}p_{51}r_{12} + p_{t5}p_{82}p_{52} + p_{t5}p_{82}p_{53}p_{32} + p_{t5}p_{84}p_{51}p_{42}r_{12} + p_{t5}p_{84}p_{51}p_{43}p_{32}r_{12} + \\
& p_{t5}p_{84}p_{52}p_{42} + p_{t5}p_{84}p_{52}p_{43}p_{32} + p_{t5}p_{84}p_{53}p_{42}p_{32}r_{12} + p_{t5}p_{84}p_{53}p_{43} + p_{t5}p_{85} + p_{t5}p_{86}p_{65} \\
& p_{t6}p_{81}p_{62}r_{12} + p_{t6}p_{81}p_{65}p_{51} + p_{t6}p_{81}p_{65}p_{52}r_{12} + p_{t6}p_{81}p_{65}p_{53}p_{32}r_{12} + p_{t6}p_{81}p_{65}p_{54}p_{42}r_{12} + \\
& p_{t6}p_{81}p_{65}p_{54}p_{43}p_{32}r_{12} + p_{t6}p_{82}p_{65}p_{51}r_{12} + p_{t6}p_{82}p_{65}p_{52} + p_{t6}p_{82}p_{65}p_{53}p_{32} + \\
& p_{t6}p_{84}p_{65}p_{51}p_{42}r_{12} + p_{t6}p_{84}p_{65}p_{51}p_{43}p_{32}r_{12} + p_{t6}p_{84}p_{65}p_{52}p_{42} + p_{t6}p_{84}p_{65}p_{52}p_{43}p_{32} + \\
& p_{t6}p_{84}p_{65}p_{53}p_{42}p_{32}r_{12} + p_{t6}p_{84}p_{65}p_{53}p_{43} + p_{t6}p_{85}p_{65} + p_{t6}p_{86} + p_{t8} \\
r_{9t} = & p_{t2}p_{91}r_{12} + p_{t2}p_{92} + p_{t2}p_{93}p_{32} + p_{t2}p_{96}p_{65}p_{51}r_{12} + p_{t2}p_{96}p_{65}p_{52} + p_{t2}p_{96}p_{65}p_{53}p_{32} + \\
& p_{t4}p_{91}p_{42}r_{12} + p_{t4}p_{91}p_{43}p_{32}r_{12} + p_{t4}p_{92}p_{42} + p_{t4}p_{92}p_{43}p_{32} + p_{t4}p_{93}p_{42}p_{32}r_{12} + p_{t4}p_{93}p_{43} + \\
& p_{t4}p_{96}p_{65}p_{51}p_{42}r_{12} + p_{t4}p_{96}p_{65}p_{51}p_{43}p_{32}r_{12} + p_{t4}p_{96}p_{65}p_{52}p_{42} + p_{t4}p_{96}p_{65}p_{52}p_{43}p_{32} + \\
& p_{t4}p_{96}p_{65}p_{53}p_{42}p_{32}r_{12} + p_{t4}p_{96}p_{65}p_{53}p_{43} + p_{t5}p_{91}p_{51} + p_{t5}p_{91}p_{52}r_{12} + p_{t5}p_{91}p_{53}p_{32}r_{12} + \\
& p_{t5}p_{91}p_{54}p_{42}r_{12} + p_{t5}p_{91}p_{54}p_{43}p_{32}r_{12} + p_{t5}p_{92}p_{51}r_{12} + p_{t5}p_{92}p_{52} + p_{t5}p_{92}p_{53}p_{32} + \\
& p_{t5}p_{93}p_{51}p_{32}r_{12} + p_{t5}p_{93}p_{52}p_{32} + p_{t5}p_{93}p_{53} + p_{t5}p_{96}p_{65} + p_{t6}p_{91}p_{62}r_{12} + p_{t6}p_{91}p_{65}p_{51} + \\
& p_{t6}p_{91}p_{65}p_{52}r_{12} + p_{t6}p_{91}p_{65}p_{53}p_{32}r_{12} + p_{t6}p_{91}p_{65}p_{54}p_{42}r_{12} + p_{t6}p_{91}p_{65}p_{54}p_{43}p_{32}r_{12} + p_{91} + \\
& p_{t6}p_{92}p_{65}p_{51}r_{12} + p_{t6}p_{92}p_{65}p_{52} + p_{t6}p_{92}p_{65}p_{53}p_{32} + p_{t6}p_{93}p_{65}p_{51}p_{32}r_{12} + p_{t6}p_{93}p_{65}p_{52}p_{32} + \\
& p_{t6}p_{93}p_{65}p_{53} + p_{t6}p_{96} + p_{t8}p_{91}p_{81} + p_{t8}p_{91}p_{82}r_{12} + p_{t8}p_{91}p_{83}p_{32}r_{12} + p_{t8}p_{91}p_{84}p_{42}r_{12} + \\
& p_{t8}p_{91}p_{84}p_{43}p_{32}r_{12} + p_{t8}p_{91}p_{85}p_{51} + p_{t8}p_{91}p_{85}p_{52}r_{12} + p_{t8}p_{91}p_{85}p_{53}p_{32}r_{12} + \\
& p_{t8}p_{91}p_{85}p_{54}p_{42}r_{12} + p_{t8}p_{91}p_{85}p_{54}p_{43}p_{32}r_{12} + p_{t8}p_{91}p_{86}p_{62}r_{12} + p_{t8}p_{91}p_{86}p_{65}p_{51} + \\
& p_{t8}p_{91}p_{86}p_{65}p_{52}r_{12} + p_{t8}p_{91}p_{86}p_{65}p_{53}p_{32}r_{12} + p_{t8}p_{91}p_{86}p_{65}p_{54}p_{42}r_{12} + \\
& p_{t8}p_{91}p_{86}p_{65}p_{54}p_{43}p_{32}r_{12} + p_{t8}p_{92}p_{81}r_{12} + p_{t8}p_{92}p_{82} + p_{t8}p_{92}p_{84}p_{42} + p_{t8}p_{92}p_{84}p_{43}p_{32} + \\
& p_{t8}p_{92}p_{85}p_{51}r_{12} + p_{t8}p_{92}p_{85}p_{52} + p_{t8}p_{92}p_{85}p_{53}p_{32} + p_{t8}p_{92}p_{86}p_{65}p_{51}r_{12} + p_{t8}p_{92}p_{86}p_{65}p_{52} + \\
& p_{t8}p_{92}p_{86}p_{65}p_{53}p_{32} + p_{t8}p_{93}p_{81}p_{32}r_{12} + p_{t8} p_{93}p_{82}p_{32} + p_{t8}p_{93}p_{84}p_{42}p_{32}p_{r12} + p_{t8}p_{93}p_{84}p_{43} \\
& + p_{t8}p_{96}p_{81}p_{62}r_{12} + p_{t8}p_{96}p_{81}p_{65}p_{51} + p_{t8}p_{96}p_{81}p_{65}p_{52}r_{12} + p_{t8}p_{96}p_{81}p_{65}p_{53}p_{32}r_{12} + \\
& p_{t8}p_{96}p_{81}p_{65}p_{54}p_{42}r_{12} + p_{t8}p_{96}p_{81}p_{65}p_{54}p_{43}p_{32}r_{12} + p_{t8}p_{96}p_{82}p_{65}p_{51}r_{12} + p_{t8}p_{96}p_{82}p_{65}p_{52} + \\
& p_{t8}p_{96}p_{82}p_{65}p_{53}p_{32} + p_{t8}p_{96}p_{84}p_{65}p_{51}p_{42}r_{12} + p_{t8}p_{96}p_{84}p_{65}p_{51}p_{43}p_{32}r_{12} + \\
& p_{t8}p_{96}p_{84}p_{65}p_{52}p_{42} + p_{t8}p_{96}p_{84}p_{65}p_{52}p_{43}p_{32} + p_{t8}p_{96}p_{84}p_{65}p_{53}p_{42}p_{32}r_{12} + \\
& p_{t8}p_{96}p_{84}p_{65}p_{53}p_{43} + p_{t8}p_{96}p_{85}p_{65} + p_{t8}p_{96}p_{86}
\end{aligned}$$