National College of Ireland

The Effect of Rural-Urban Brain Drain on Educational Learning in Cross River State of Nigeria

Examining the technological option on limiting the impact

of Brain Drain

A Research Project

By

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Certification

This is to certify that this project is an original work of Mr. Achom Chibueze Dominic which I now submit for assessment of the programme of study leading to the award of Masters of Science (M.sc) Degree in Learning Technology.

Is entirely my own work and has not been taken from the work of other save and to the extent such work has been citied and acknowledged within the text of my work.

Signed: .....

Date: 04/08/10

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Dedication

This research work is dedicated to my son Nathan and my wife Breda Achom I would especially like to thank my brother Ify Achom for his time and sacrifice during my research work.

Acknowledgement

First and foremost, I give thanks to the almighty God for the guidance and strength he has given to me.

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Dominic Achom.

List of Figures

Table of Maps

Executive Summary

In the past two decades, a large number of Nigeria's valuable human resources and intellect has been relocating from the country in search of 'greener' pastures to the urban areas and the world over. These problems have taken a turn for the worse with the economic down turn in the country, in the last 20 years. Nigerian rural areas has seen highly skilled professional migrate from their communities to areas where they could fulfil their potential. This trend of Brain Drain has escalated in magnitude to the level that has been causing serious concern and the inherent implications for the Countries ability to sustainable capacity building for development and plan strategically. As the country continue to search for developmental strategy to help limit the effect of Brain Drain there is a need to introduce to modern and digital technology media as part of the strategy to help limit the effect of Brain Drain on educational learning in rural communities in cross river state of Nigeria. A strategy anchored on technology based on two way partnership with developed countries that benefits more from this kind of migration to help reduce or limit this kind of migration.

This research will be investigating the reasons why valuable human resources are leaving the rural areas to urban areas, although the reason appears to be diverse, ranging from professional to economical. There are also pull and push factors, some of the reasons for the departures stem from lack of fund, internal conflict to political indifference by the government of the day to develop a strategy in other to-execute capacity building and domestic policies, which has resulted in imbalances between labour supply and demand. The imbalances are now being acutely accentuated by the impact of the Brain Drain.

Table of Contents

Chapter Three

Chapter Four

Chapter Five

CHAPTER ONE

1:1 Introduction

In Nigeria, Brain Drain as been receiving a considerable amount of attention, due to the loss of highly trained professional who are moving abroad. Some decade ago, internal migrations in general and rural urban migration in particular, were viewed favourably in the literature of economic development. There was a time when rapid internal migration and Brian Drain in particular was thought to be a process were surplus human resources could be use to bridge the gap of skill short fall in urban centres. In the last four decades there has been a significant increase in rural Brain Drain to urban areas and to other countries, this type of migration from rural areas has involved all segment of society, this has even taken a more increased significant as highly skilled women who prior to the 1990's stayed back in the country to undertake work were now joining the Migrational job stream in ever-greater numbers creating a more worrying situation for rural communities. Disparities in income, lack of job opportunities and access to better services in urban areas and in more developed countries can be said to be a pull factor. This might explain the rapid increase in Brain Drain. The Nigerian experience of Brain Drain is of historic phenomenon due to the impact civil war in the late 1960's has had in Nigeria and the Migrational nature of Nigerians, which has since been exacerbated by the decline on the country's economy in the late 1970's and early 1980's due to corruption and mismanagement, which in turn exacerbated and encouraged Brain Drain causing the out migration of highly skilled academics and professionals to other countries of the world. Brain Drain from Nigeria to other parts of the world is causing a lot of disquiet

to the government, the educational sector and the wider society at large due to the negative impact it is having on development and planning. According to Usoro (2007) there are over 50 million Nigerian in Diaspora who have made other parts of the world their place of permanent residence, some with expertise that could have been tapped to develop the country. With thousand of skilled migrants who are now joining the Migrational job stream, representing a new wave of the immigrant, destined to areas where they can find and sustain good jobs and quality of living. Through this process of Brain Drain and out migration, Nigeria has watched helplessly the stream of talented and highly skilled professionals crucial to its development needs move abroad. As the discussion on Brain Drain and its implication on education continue, education has been assigned a key strategic role in technology and human development, including economic growth and poverty elimination in rural Nigeria. These ambitious targets have been set by the past government to be achieved by the turn of the decade, this target of free basic primary education in rural communities might not be met due to lack of funding and continuity by successive government. However, while that might be the case achieving the goals of free primary education (FPE), may further be complicated by one under-emphasised aspect of globalisation. which is the out migration of skilled teachers, lectures and educators, hence the need to introduce technology to aid the educational system. There has been a gap in how to use technological knowledge to help advance education in rural Nigeria, and how such introduction would be viewed and their implications for the achievement of strategic educational objectives. We are looking at a scenario where migration becomes an impediment to development and in the worst case, it may undermine the educational sectors in developing countries and capacity building through a 'Brain Drain' that allows advanced countries to gain

on the investments made by developing countries in training of skilled manpower made for the development of their societies. The need to use technology to limit the effect of Brain Drain in developing countries and Nigeria in particular is an area where most research should focus, so as to develop a strategic plan that could be implemented in a way as to alleviate the problem of Brain Drain in rural Nigeria. As the debate on how to redress and limit the effect of Brain Drain in Nigerian rural communities continues and the inherent effect on educational learning gathers steam. There is a realisation that the problem of Brain Drain needs a multi strategy approach in dealing with this type of Migrational problem. There is a growing convergence of opinion for the need to apply technology in educational learning in Nigeria. The growing role technology can play in education has been seen especially in developed countries where it has been part of their educational strategy for years has given credence to the need to do the same in Nigeria. As Brain Drain continues to pose a lot of strategic challenges to education planners in Nigeria it is important for the government and the society at large to look outward to best practises around the world where multi facet approach has been used to limit the effect of highly skilled professionals migrating.

The use of technology to fight the scourge of Brain Drain in our rural communities should and must be the next stage in providing the access to qualitative education. It is important that the Nigerian Government and other stake holders in the educational sector come to a mutual agreement or arrangement on how different kinds and types of technology can be used to provide the needed support to education of rural Nigerian communities. The impact of the Brain Drain on Nigeria is complex. With different schools of thought, on how Brain Drain impacts and affects rural communities, in Nigeria Brain Drain as a research has been receiving a considerable

amount of attention; this is so because of the negative effect it has on rural areas, the urban centres and the general level of economic development in the country (ubi 1990). According to Bankole (1986) in the government and educational circles, the mere mention of the word "migration" evokes disgust or frustration. In assessing the dimension of the problem, Abasiekong (1980) reported categorically that the problem of rural-urban migration has posed serious problems, social, economical and political in many developing countries. It is a phenomenon which has considerably frustrated the effort of many development planners, and one which has yet no tangible or conclusive solution. This research intends to establish the fact that this type of migration is the main cause(s) of low educational learning performance.

This research will also look at how Nigeria, and Nigerians in Diaspora can help the government develop a technological strategy to reduce 'the pull and push factors' that trigger the desire by people to leave for urban areas including other regions of the world. To prefer a strategy that adequately deals with the negative impact of Brain Drain on rural Nigeria with technology as the corner stone. This research intends to prefer an effective and simple strategy on how technology can be used to limit or manage the problem of Brain Drain. A technological solution based on established facts. This research will undertake this study with the objective of establishing the causes of Brain Drain and identifying the measures required to limit it, and even reverse the Brain Drain problem in rural Nigeria, through which Nigeria has lost thousands of highly skilled professionals crucial to its development needs. Most of these migrants are young and talented professionals who are often forced by circumstance to move from the rural areas, for difficult, dangerous and often menial jobs that promote only the well-being of the societies of the receiving countries. As migration continues to cause strategic problem to planning and development in

developing countries, skilled professionals who migrate to developed countries are making this journey for various reason, the reasons for their choices of destination are sometimes social, historic, cultural or economical ties. The argument and discussion on the issue of migration and Brain Drain in particular has take a new turn, with different school of taught, some for and against. "Recently, several authors and literatures have argued the case for a more positive view of Brain Drain in terms of an increasing rate of return to education and incentives to train in sending countries, this hypothesis is controversial on both theoretical and empirical grounds" (Commander *et al.* 2004). Those who propagate the positive view of Brain Drain have only looked at the gains of receiving countries and have not looked at the negative impact of the Brain Drain to developing countries. As the argument for or against Brain Drain continues, there is a need for a more systematic approach to finding a solution to Brain Drain affecting developing countries. There is a need to introduce or apply technology as part of the solution in limiting the effect of Brain Drain in Nigeria. As technology advances so is the need to apply this technologies as an aid to any development strategy that are been implemented to help limit the effect of Brain Drain. The impact of using technology in delivering educational courses has not been properly researched or documented, hence the need to carry out the kind of research that focuses on how different technologies can be used to ease the effect of Brain Drain on education in rural Nigeria. Technology has a part to play in rural education in Nigeria. As more and more countries introduce the use of different technological media to deliver educational courses, it is time developing countries and Nigeria in particular to start integrating different technology platforms as a means of delivering qualitative and quantitative education to teaming numbers of rural student who are missing out on qualitative education due to the effect of

Brain Drain. Technology is there to delivery this kind of long and short distance course it just needs adapting to suit the necessary infrastructure in place. With the loss of trained professional educators who are migrating in numbers to urban and developed economies, it is imperative for the government and all stake holder in the educational sector to develop a strategy that allows for the use of different kinds of platforms such as mobile phones, computers and other hand held device to deliver qualitative and mass education in rural Nigeria. Using technology or developing a technological model should be a way that education can be delivered, to rural communities in Nigeria in the short term since the migrant will not be coming back soon. The need to develop a technological based strategy is imperative if the problem of rural- urban Migrational Brain Drain is to be checked. It is virtually on this note that Usoro (1974) reported that the Government of Nigeria are faced with the problem of how to retain professional and skilled teachers in the rural areas. Rural-urban Migrational Brain Drain is therefore a hindrance to providing trained educators to rural communities and educational development efforts of the Country. Many educational strategies of the Nigerian Government have failed because of the absence of rural professionals who are supposed to serve as the agents for educational development.

1:2 Research Question

This research intends to examine the effect of rural urban Brain Drain, and its impact on education in rural communities. It will also examine how technologies can be used to limit the effect of Brain Drain. This research will look at different technologies options that can be applied to aid education in rural communities in Nigeria, where migration has left most parts desolate.

1:3 Objective and Scope of this Research

Brain Drain is a geographical phenomena experienced in many parts of the world, especially in the developing countries and particular in Nigeria. In this case, this study will examine the various factors motivating rural-urban Brain Drain in rural communities and its effect(s) on rural education and learning.

The research also seeks to examine how technologies can be applied to aid learning.

1. Identify the various ways in which recent advancement in technology can work in tandem with learning practise in rural communities.

2. Investigate the potentials for the deployment and exploitation of low-cost technologies in addressing the challenges of poor connectivity in Nigerian schools.

3. The study is designed to explore the possibilities of using these emerging technologies to support, enhance and improve the educational delivery opportunities and the learning process in the less endowed schools in rural and under-served communities in Nigeria. Focusing on Cross River State.

CHAPTER TWO

2:1 Literature Review

Introduction

This economic interpretation of the migration phenomenon was first stated explicitly in 1885 and 1889 by Ravestein in his "Law of Migration" (1885 and 1889). Ravestein's two seminar papers represented a reaction to his earlier observation in 1876 that migration appeared to proceed without any definite law (Farr 1976). Following an extensive empirical enquiry carried out first in Britain and later in twenty other countries, Ravestein concluded that migration proceeds according to certain ordering principles or laws that are largely economic. According to Mabogunje (1970) migration represent a basic transformation of the model structure of a society in which people move from small but mere agricultural communities to largely non-agricultural ones. According to the UN (1979) migration as geographical mobility of persons between areas, generally involving a change of residence over a specific period of time. Brain Drain has become an important issue of urgent redress in social policy, because of the need to check the continuous loss of skilled manpower in rural communities in Nigeria. As the government grapple with finding a solution to these problems, there is a different school of taught who see migration as a social way in which society balances itself from human surplus.

2:2 Technology

The role of technology in teaching and learning is rapidly becoming one of the most important and widely discussed issues in contemporary education policy (Rosen and Well, 1995; and Thierer, 2000). Some school of taught have emphasised the positive effect educational technology is having in learning.The problem of Brain Drain has been a source of constant compliant by African government, business and other stakeholders in the continent, the loss the continents strongest, brightest and skilled to developed countries who are creating the incentive to attract this skilled professional to their own societies to the detriment of the developed countries. As Africa and Nigeria in particular struggle to cope and find strategies to limit and reverse the effect of Brain Drain, there are other factors that are mitigating against their favour in implementing successful strategy. Technology has enabled a fundamental difference by which African professionals in the West can transfer their skills and knowledge through digital means. The need to allow recent trends in technology that would allow the educational sector and rural communities in particular to benefit from skill and knowledge transfer by Nigerian professionals and academics leaving abroad to help draft and implement a technological strategy that is anchored on a return to base knowledge transfer (RBKT). Although, technology applications can help support higher-order thinking by engaging students and academics in authentic, complex tasks within collaborative learning contexts, it needs a formal and a well taught out strategy that could aid retention of skill and knowledge within societies. A deliberate pattern of incentives to attract mobility of

people with skills are been implemented in developed countries with developed countries as the target which in turn causes greater global mobility to countries which have the right conditions. American green card policy is an example of a scheme with incentive that allows Brain Drain to occur. While technology might not solve all the problems of educational learning there is a growing evidence that the proper integration and application of digital technology can support or aid learning. The use of educational technology as part of learning or as a delivery platform are now being assessed as an important part of enhancing intellectual development and applied knowledge amongst teachers and student as a way of intellectual collaboration. As the need to use technology as a learning and collaboration tool becomes widely used and vital not just as a platform but as a means for acquiring skills and knowledge that would be beneficial to these communities. This support technology must be people centred to allow for easy acquisition and skill retention. Instead of focusing on isolated, skills-based uses of technology, schools should promote the use of various technologies for sophisticated problem-solving and information-retrieving purposes (Means & Olson, 1995). From the beginning of the computer age, educational researchers and practitioners have told us that for technology use to be successful in our schools it needed to be closely tied to school reform. The unavoidable conclusion is that successful improvement of technology, science, and science based education is of high importance to our future. Educators must prepare for a technology-rich future and keep up with change by adopting effective strategies that infuse lessons with appropriate technologies. This makes authentic assessment needs even more important. Assessments must keep pace with effective instructional technology use. One of the necessary characteristics of the effective use of technology is that it be used for authentic tasks while there are different

schools of thought who argues on the importance of using technology in education in fostering learning, some encouraging aspect of technological use in school is supported by the need to structure the educational curriculum in school to integrate acquired technology to form core part of educational learning, that is progressive and adaptive to the needs of students and teachers in the accomplishment of complex tasks. Technology must not be treated as a stand-alone application if it is to help accomplish collaboration, skill acquisition and intellectual development. Technology in educational learning can be applied as a platform that helps engage students in collaborative learning which can improve learning experiences that might involve complex educational solutions. With the coming of the digital age various forms of digital technology such as Mobile phone, laptop, iPod, ipad, the internet, Bluetooth and Wifi technologies, have become widely available, this technologies could be of dual use for school and home use, because they are portable and can be moved around easily, can help play a major role in blurring the distinction between skill acquisition, educational learning in schools and collaborative learning at home. The changes that accrue with the integration of technology in schools and classroom help infuse more structure and process in delivering course work and make teachers and educators more of a facilitator of skill and knowledge. This gives teachers and educators a more instructional role in knowledge transfer instead of been seen as a teacher. If the use of technology is introduced as a collaborating tool in classroom this could foster a trend where digital technology such as mobile phone, the internet, and computers could become driving tool in limiting the effect of Brain Drain as learning could be take place any were making this technologies people centered. Often, learning with technology is teacher-centered rather than student-centered. The use of technology has moved from being a platform for Industrial process a few

decades ago to becoming a tool of information management in a rapid changing world. As more and more countries integrate technology into their educational system, there is hope that it could help educational learning transform towards a more collaborative and interacting learning experience. As the process and debate on how to apply and use technology in schools and other learning centres, it is important to understand the need to train the teacher and educators who are going to be on the front line in delivering this knowledge base.

Technology can play an important part is providing a solution to how education can be delivered and be taught in rural areas. With the advent of the mobile phone, computers, memory cards, have provided an opportunity that can be used to aid the educational learning. All there device can be loaded with educational content(s) for students to insert in these devises to be used as a learning material. These devises can be used to deliver educational material and content in rural schools in less endowed areas of Nigeria. As the need to adapt technology to educational learning continues, there is a school of thought that argues, against the use of such modern technology in education and particular in schools because they feel it will stifle talent development and make teachers and student dependent on technology. Although there are reasons to support the use of technology as part of an integrated strategy in schools, when used properly as a part of the learning process. However, another school of thought focuses their argument on the importance of developing domestic technology based on local innovation the reason for propagating this is to protect local schools as they view foreign technology might be detrimental to rural education. Domestic innovators could be important for various reasons, slow uptake of international technology, diffusion due to localization of knowledge spill-over specific technology needs of poorer countries that are ill-served by rich-country innovation,

domestic knowledge production that underpins the capacity to absorb foreign technology. The need of modern technology in educational learning has been the focus for educators and researchers on how to apply technology in a way that gives both the teachers and students control.

2:3 Migration

In fact there is a school of taught who believes that Migrational Brain Drain is good for Nigeria because of its population and the amount of remittance migrants send home to the country, without looking at the bigger picture and the effect this kind of emigration is causing. In some recent literature on the effects of skilled migration it tends to present Brain Drain as an opportunity for sending countries. Mountford (1997), Beine et al. (2001) and Stark and Wang (2002) argue that a well managed migration rate, making available higher wages (abroad) for the most skilled, can create an incentive to invest more in education, thus producing an increase domestic level of per capital income. As a consequence, skilled emigration may turn out to have beneficial consequences for welfare and growth in the home economy. In particular, Stark and Wang (2002) highlight the possible role of a positive migration change as a substitute for educational subsidies in less advanced countries, in order to reach the socially optimal level of human capital. A structured learning process can help transfer of Information, communication and technological knowledge into transmittable information based communities. So many educational sectors make knowledge 'saleable commodities' on a cross-bordered scale. The use of technology to aid capacity-building in the educational sector is an avenue that should be exploited in order to reduce the impact of Brain Drain in rural Nigeria. Hence this

research will focus on the developing strategy based on the use of technology to combat the effect of Brain Drain. Some scholars such as Clarke (1987) hold the view that it is a series of movements that involves a change of residence of substantial duration stay upward of one year. Little (1965) defined migration as a flight from the land which he ascribed to the lure of the town. Still on the definition of migration Jackson (1969) recognizes it as a permanent or semi-permanent change of residence. Gould and Kolb (1971) refer to it as the geographical movement of individual or groups. Sada (1983) sees migration as an adjustive mechanism for relocating factors of production, and given the fact that natural resources are essentially immobile. The other complementary resources notably human factor and capital tend to move from areas of poor to better natural endowment in order to promote a better utilization of factors of production, by his proposition natural endowment becomes the major attraction for migration.

2:4 Brain Drain

Rural urban Brain Drain, as an aspect of the general migration, as seen by Olatunbosun (1975) as a "drift to urban centers by rural settlers" as the drift of the labour force from rural areas, to the industrial urban areas in search of gainful employment, Soja (1976). This process of movement between two places which involves a change of residence has been studied severally by different authors. But the use of technology as strategy to reduce the impact of Migrational Brain Drain is an area where little research has been undertaken.

Gregory (1974) in his study of migration in Upper Volta points out that demographic data indicates that urban areas in the whole of West Africa are growing more rapidly

than rural area. He emphasizes that this growth is the result of two factors: The natural increases in the present and expanding urban population. In migration to the cities from the rural areas, and further argues that the second factor accounts for much of the difference between rates of urban population growth and rates of rural population growth. Commenting on its effects, he asserts that instead of providing the labour force and the market for an increase in national wealth, rural-urban migration provides the labour and market for an increase in foreign wealth. Gregory also observes that rural-out-migration has substantially negative effects in many rural areas, whereby the young, the educated and the ambitious, abandon the countryside which remain relatively improvised in opportunities. He concludes that it is far from being a natural adjustment and that it remains highly detrimental to genuine development. Writing on the same subject, Caldwell (1969) asserts that rapid urban growth rate of 4% per year in urban population meant that much of the increase was undoubtedly attributable to rural-urban migration and that many of the inhabitants had been born in the villages. While there have been researches on the issue of Brain Drain, there have been few studies on how technology can be used to combat or limit Brain Drain in rural Nigeria. With migration induced Brain Drain picking up speed in the past four decades and the impact it is having on rural education, it is imperative to research how to develop a process or strategy that would allow educational planners and stakeholder in Nigeria, develop and integrate technology so it could be harnessed to deliver both qualitative and quantitative education to these rural communities that have been affected by rural urban migration.

In order to explain migration better, Mabogunje (1970), tried to apply the systems approach to the study of rural-urban migration, with the rural community and the urban areas as control sub-system. He considered migration not just as only a

simple linear, directorial, push-pull and cause-effect movement; but a circular inter-dependent, progressively complex and self-modifying system in which the effect of changes in one part can be traced through the whole system. He argued that forces are set in motion by increasing economic development and greater integration of rural economy coupled with the greater integration of the rural and urban areas, which according to him; trigger a chain of rural-urban migration actions within the system. According to White and Wood (1980) in support of the system approach, any migration event may have repercussions. It may manifest itself in further migration, while all migration takes place within some structured framework and acts in some way either to alter or maintain that structured framework. This postulation is relevant to the researcher's area and purpose of study. From this system it can be clearly seen that there is every need to develop the rural economy which is not depreciating. Because as the rural economy is battered by rural-urban migration, so will the migration phenomenon be perpetrated and encouraged. There is need to reinforce the rural control subsystem in order to regulate the whole system. By now, the fact that rural-urban migration is caused by rural-urban imbalance or differential in economic, social and cultural opportunities is no longer in dispute (Makiwa 1981, 1983). Also Bankole (1986), if human wants are satisfied equally within a geographic space, there would probably be no migration given the assumption all these migration decisions are rational. Wagogu (1976), view that migration is essentially a response to economic incentives is seriously supported. Olatubosun (1980), Ojo (1977) and Adepoju (1976), have all settled for the thesis that the predominant motives in migration are economic. In other words, internal migration can be said to be closely related to difference in the reduction of regional inequalities in the distribution of incomes (Melbourne, 1970; Todaro 1969), (Harris and

Todaro,1970).The basic assumption underlying the interpretation or migration in economic terms is as follows: Firstly, that there exists income differentiate between the source and destination region, and secondly, that there exist differences in employment prospects between the source and destination region, and thirdly, that the cost of the friction of transportation is related to the volume of migration. Wogugu (1970), in his study of "internal migration and the Nigerian rural sector" maintains that migration is essentially a response to economic incentives. He asserts that migrations are adjustment mechanism brought about by the changing balance between the location of economic opportunities and demand for labour to exploit this opportunity (Wogugu, 1976). He is of the view that, the economic development of Nigeria involves structural changes in the location of economic opportunities and since the Nigerian economy is predominantly agricultural, migration in the country largely takes the form of gradual movement of workers from the subsistence sector to the export sector and from rural to urban areas. Another look into the economic model of migration is the neo-classical economy theory of resource allocation which asserts that labour moves from areas where it earns a relatively low return to areas where it can earn a relatively higher return. It is postulated that with time the returns to labour will, be equal in all region as a result of factor movements Wogugu (1976) and Adepoju (1981).

Opposed to the neo-classical economic view that migration tends to even our regional economic inequalities is reported by Gumar Myrdal (1957), he asserts, that migration tends to aggravate regional inequality rather than reduce it, especially during the early stages of development.

According to him:

".....The localities and Regions where economic activity is expanding will attract net immigration is always selective, at least with respect to migration age, this movement by itself tends to favour the rapidly growing communities and disfavour other ....."(Myrdal 1957).

Myrdal (1957) argues that because of unrealistic assumptions particularly the motion of a stable, economic theory has become blind to this reality, even in the face of generally wider inequalities. Another variant to the economic model of migration is the motivational theoretical mode exemplified by the popular push-pull hypothesis which theories are satisfaction motive for migration Taylor (1969), Udo (1975). Lipson (1980), in his study of the world wide impact of migration from rural areas in poor countries through the analysis of migrants data from several hundred villages reported that the primary causes of migration is economic and discovered that both the push-induced and pull-induced migration are essentially in exacerbating the effect of Brain Drain. He further argues that this differential economic background of the push and pull migration results in the push migration being usually over a short distance and without the ability to generate much extra income or skills while comparatively, the pull migration, usually over long distances tend to generate income, skill, knowledge or remittances useful to the family as a whole. It is empirically clear that the search for economic betterment plays a major role in rural urban migration. In the words of Mitchell (1959) and Gurgler (1969) economic factors appear to be a sufficient condition. According to Makiwa (1983), the unequal distribution of social infrastructure and services in favour of urban areas underscores the realities that make agriculture less important and less prestigious sector of the

national economy. This according to him has made rural life "very dark and dull" to the young budding labour who consequently desert the rural areas.

According to Nabile (1979) migration in Africa especially labour movements can be considered a form of spatial interaction. Regions of varying levels of economic and social development are connected by streams of persons who move from one region or locality to the other in order to avail themselves of real or perceived opportunities.

According to Udo (1975), migrants are selective tendency and certain section of the population tends to be more migratory than others are referred to as differential migration. This situation where the young and able-bodied, educated men and women are siphoned out of the rural areas leaving the too young, aged and women affects agricultural productivity Eriega (1990). The drain of able-bodied men from rural-areas and the considerable ageing population pose serious problems for the replacement of the rural generation and hence the replacement of the rural generation with more technological advance process of integrating the rural subsystem within the urban areas, there is a need for more technological enhanced educational process for the rural economy itself. Also another bad impact of migration on rural communities is the fueling of land dispute and farmland crises by urban migrants which lead to the disruption and destruction of farming activities and farm crops respectively Eriega (1990). Agber (1993), the urban migrant, disorganize the peace and stability or the village by financing and sustaining with urban-derived incomes and resources, unhealthy rivalry and litigation; in their home base Okpara (1983). Also, several cases of broken homes have been observed, as the male head migrates. This leads to the disorganization of the social cohesion and the hitherto communal labour which waist in the rural areas Adepoju (1979). This was seriously implied in Ekan's (1977) view about migration in Botswana when he held that "rural

out migration of males has adversely affected the farming communities..."Ekan's (1977). According to Clout (1976), states that the general assumptions are that migrants obtain better paid employment, have access to improved social facilities, and enjoy better living conditions in the city but that the implication of rural-urban migrated are equally profound for departure areas. He observes that such areas are affected with respect to size and structure of their resident population, pressure on land resources for agriculture and other uses, and provision of services for remaining rural residents, since rural-urban migration is both age and sex selective. It has the effect over time of reducing rates of natural increase, adding that strong outward flows of migrants have contributed to the recent reduction in birth rates in Southern Italy and that similar results have been recorded in many other regions.

Amin (1974), maintain that on the basis of African experience, migration is a "gift" from the poor rural areas to the rich urban areas, and that it is the best men and the ambitious that flock to the urban centers. In fact, the consequences of out-migration from the rural areas are not always negative, there are positive elements, and one such aspect is the remittance which migrants send home. According to Sada (1983) the concept of the western urban man does not hold for Nigeria, he says that the Nigerian urban man is still rooted in the village to which he returns, dead or alive, consequently, he remains tied to the rural environment while in the city. He maintains that when he (migrant) is successful, he demonstrates the extent of his success by spending on projects in the rural areas through donations at public ceremonies and capital investment in landed property, while the most enlightened ones invest in agricultural projects. Johnson and Whitelaw (1974), indicate that most migrants send various sums of money home, at times regularly. Some of the remittances are used mainly for immediate consumption not for saving or investment. Also, Sada holds

that in the city, that migrants are directly linked with their home through the village and community unions, migrants in the city from village, town or clan unions are still attached to the communities whose main objective is to transmit some of the urban "Civilization" to their rural areas, and that they are involved deeply in decisions concerning the developmental projects. This he said are done by fund raising ceremonies which are openly launched and meant to attract the wealthy from urban areas, in which a lot of resources transfer to the rural areas.

Udo (1972), in his view holds that rural in-migrants have been a factor of socio-economic change in the rural sector, they contribute to diversification of cropping pattern by exploiting resources neglected by the natives. Commenting on the same view Adegbola (1976), says return migrants usually serve as agents of change and through new tastes, raise aspirations, introduce new productive techniques and organization, they also adopt modern co-operative farming, credit association and other related activities. Mabogunje (1970), points out that whether in city or rural area, migrants have made significant achievements and invaluable contributions to the economic life of their regions. Moreover, their activities have helped to raise the standard of living of the many that have not left the security of their homelands. Another advantage of rural-urban migration on farming communities is that the resulting labour shortage could lead to an induced technological change, more rational and promote simple mechanization Adepoju (1980), or help reduce pressure on land Mueller (1973). While the rural areas feed the urban areas with enough manpower to man the administrative and economic activities, the urban areas should, reciprocate, through remittances and direct investment in rural communities. This will strongly integrate the two subsystems and promote reciprocity, harmony and enhance mutual development. Traditional discussions of the immigration of

skilled workers mainly focused on the loss of human capital and public investments in education and training (see, e.g. Bhagwati and Wilson, 1989), that is, the loss from Brain Drain. Though the issue of Brain Drain has been noted by (Dawson, 2007) and discussed (Schmitt and Soubeyran, 2006), it is usually limited under a two-country or bilateral framework. On the other hand, the phenomenon of multi-country Brain Drain/gain and circulation has been addressed (see DeVoretz and Ma, 2002), but there is no explicit model to study the issues of the decision making strategy of the immigrants, the final distribution of them (in the three parties), and the impact of such migration to the country of origin. The economic decline of many African countries has lead to the decline in the quantity and quality of graduates. Other contributing factors that are causing Brain Drain are the widespread internal and external conflict on the continent which has created the need to move away from their communities to area of relative peace which is mostly in the developed countries. Money that could be used to fund education and other development project are been channelled to buy arms hence the political indifference which has not created conditions and opportunity to pursue professional careers. Educational experts agree that higher education throughout Africa must be revitalized.

According to the Science Citation Index, Africa currently produces just 1.4 percent of the articles published in peer-reviewed international journals. The migration of African scientists to developed countries represents a personal decision shaped in large measure by an individual's assessment of where the best career opportunities lie. Governments can help influence this decision by developing and implementing policies for African scientists that improve their living and working conditions at home that offer realistic prospects for secure and rewarding professional careers in Africa.

This research intends to examine the effect of rural urban Brain Drain, and its impact on education in rural communities. It will also examine how technologies can be used to limit the effect of Brain Drain.

CHAPTER THREE

3:1 Overview and Methodology

Brain Drain as a research topic has been receiving a considerable amount of attention. The reasons for these are the negative effect it has had on educational planning and development and its inherent implication on learning.

As developing countries and Nigeria in particular seek to find solutions to limit or redress the problems Brain Drain is having on education, there is a need to seek alternative methods of delivering educational learning. There is a growing need to develop an educational strategy that is anchored on technology. That would help alleviate the loss of highly skilled teachers and reduce the need to close schools when teachers are not available to come to class. As technology such as mobile phones, memory cards and hard drive come of age, there is a need to adapt these technologies in educational learning in rural areas, so as to help compliment the traditional method of delivering learning in rural communities. It is important to emphasise that with the advancement in technology it is now possible to use technology such as Computers, Mobile phones, Web cams, Face book, Twitter and YouTube to deliver educational material to a wide range of students in schools, without the teacher necessarily being in the class room. With the advancement of technologies it is important to anchor technology as an integral part of any sustainable developmental strategy; this technological strategy can help limit the effect of Brain Drain in the developing world and particularly in Nigerian. The loss of skilled professionals that are trained with the scares resources in these communities

is causing disquiet in government circles and the wider society at large. It is in the interest of educators and stakeholders to come together to plan and develop a more sustainable strategy for the community. The development of an alternative strategy in developing countries will need a strategic partnership with developed countries to transfer technologies instead of throwing money at the problem of Brain Drain. A workable strategy must include a two way control mechanism where migrants are given incentives to come home quarterly to deliver training, courses and symposia in their local communities. With schools battling the effect of Brain Drain, there is a realization that there is a need to develop an alternative strategy to ease or reduce the effect of the loss of skilled teachers, in rural areas. The need to use technology to limit the effect of Brain Drain in Nigeria education may look simplistic and unnecessary, but the lack of cohesive government strategy and the declining resources has exacerbated the problem of Brain Drain.

3:2 Hypothesis

Based on the objective of the research work and in order to validate or invalidate the effect of migration. The following hypotheses have been formulated for testing.

HYPOTHESIS 1

HO: No relationship between Brain Drain and the use of technologies.

HI: There is statistical relationship between Brain Drain and use the of technologies.

HYPOTHESIS 2

HO: There is no relationship between Brain Drain and educational development.

HI: There is a significant relationship between Brain Drain and educational development.

3:3 Data Collection and Analysis

Two source of data used for this research where primary and secondary source of data. The primary source of data used for this research consist of mostly, the preliminary work done by the researcher at the onset of the study, this includes an extensive field study aimed at eliciting information about respondents opinions, views and reactions concerning the reason for migrating. The methodological framework was designed to explore the quantitative and qualitative impacts of Migrational Brain Drain and how it affects rural education and to identify a solution using available technology. Through the variety of methods employed it was possible to explore the general impact of Brain Drain on schools and the shortage of teachers in educational systems as well as to understand the school curriculum and individual experiences.

Questionnaires were circulated to seek the impact of technology in limiting the effect of Brain Drain. Methodology for this research will include the use of interviews, questionnaires and reliable secondary sources. The secondary sources of data supplied information which is mostly from textbooks, journals, and other periodicals as well as government documents.

3:4 Justifying Methodology

The methodology used in justifying the research, was based on a structured and formal interview with proprietors of schools, educators and locals whose opinion and answers to the questionnaire distributed formed part of the data collection process for the research. Also reconnaissance of area of study was carried out before questionnaires were distributed in Calabar to selected communities and schools. The questionnaire used in the survey was simplified to allow for easy understanding. The researcher undertook interviews and surveys to build up information, data and opinion on the topic of Brain Drain and how to use technologies to limit its effect on education in rural communities in Nigeria. Calabar in Cross River State was chosen for this research because of it location which is at the extreme end of south-eastern part of Nigeria, its location to a sea port and international boundaries which make it easy access to would be migrants. The reason for undertaking this research was based on the two premises: (1) Encourage dialogue on how technologies can be use to limit Brain Drain. (2) Develop structured technological schemes, to facilitate educational connectivity.

3:5 Sample Characteristics

The information collected for this research was vast and as a result I tried as much as possible to sample the opinion of almost all within the selected communities in Calabar Cross Rivers State of Nigeria. Therefore, systematic random sampling was used to sample the communities. This was chosen because it limited the biases of the researcher, in the information collection process.

3:6 The Structure and Design of the Questionnaire

The questionnaire was structured in a simple manner for the easy reading and understanding taken account of the rural setting and target groups. The questionnaire aimed at eliciting information on the effect Brain Drain is having in rural communities with a particular emphasis on the need to introduce technology as part of a planned strategy to limit the effect of rural Brain Drain. In this research open and close ended questions were asked in order to give a good mixture of questions and allow the respondents to express their personal opinions.

The questionnaire was designed as simple as possible in bold italic for easy reading. The questions were three pages. The date was collected and distributed by hand to the five communities sampled in stages as the communities where far from each other. The participants were students, teachers, inhabitants, and civil servants. Participant cut across all strata of the community. The sample size of the questionnaire was five hundred, with one hundred questionnaires distributed to each of the five communities sampled. Random sampling was used to limit bias and the questionnaire was distributed to one in every two houses. The response rate on the questionnaire returned was over eighty percent. Interviews were also carried out to gauge opinion and views of educators, teachers and stakeholder who are in the front line and have experienced directly or indirectly the effect Migrational Brain Drain is having on the educational sector in rural communities in Nigerian and what strategy could be put in place to help limit the impact of this kind of migration. Interviews were carried out as part of the data collection process. The interviews carried out, were not in groups but individually and was summarised for easy reading and understanding.

Both interviews and questionnaire were carried out in order to provide a more scientific and balanced research to help validate or invalidate research hypothesis.

3:7 Research Contribution

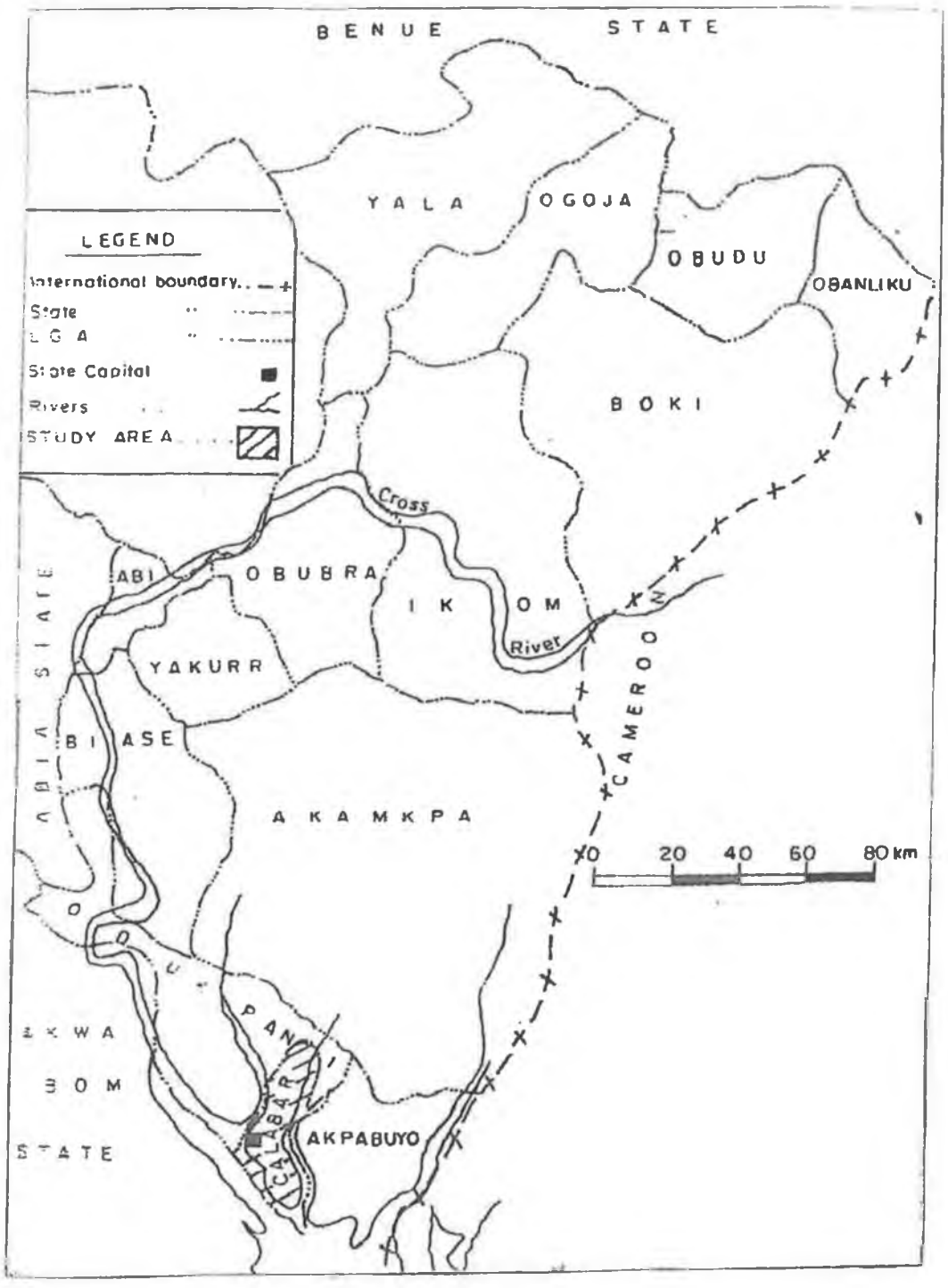
This study focused on the relevance of using technologies, as the cornerstone of limiting the effect of Brain Drain. It is expected that this research would generate the interest that would lead to large scale research into the outcome of technology usage in educational learning in schools in both rural and urban areas of Nigeria. The use of technology in learning is an area of interest for teachers and student alike. It is important to access the relevance of the knowledge gained from this study by Government, States, Communities and schools as a platform and model in developing course contents for the delivery of technological programs in rural Nigeria. A strategy based on technological research, collaboration partnerships with relevant experts and professional bodies in rural communities should encouraged. The government and stakeholder should increase the collaborative efforts of schools within the local communities and encourage private sectors participation in providing funding and resources, that are ring fenced for these propose of addressing the issues in relation to rural skills shortage, knowledge development, retaining skilled manpower for rural community development.

3:8 Study Area

Calabar is the capital of Cross River State the state is located at the extreme end of the south eastern part of Nigeria. It is located on the latitude 4 and 5 north and longitude 8 and 9 east and occupies a total area of 23,074sqkm. The 2006 census figures (provincial) released by the National Population Commission gave the total population of the state at 2.89million people. According to Obot (1980) Calabar developed from an ancient slave port located at the Calabar river tributary of cross river creeks. This gave it a greater advantage as a trade port. According to Udoh (1967), this area was first colonised by the Portuguese in the 15th and 16th century. This lasted up to the 17th century when salve trade in the area reverted to the Dutch.

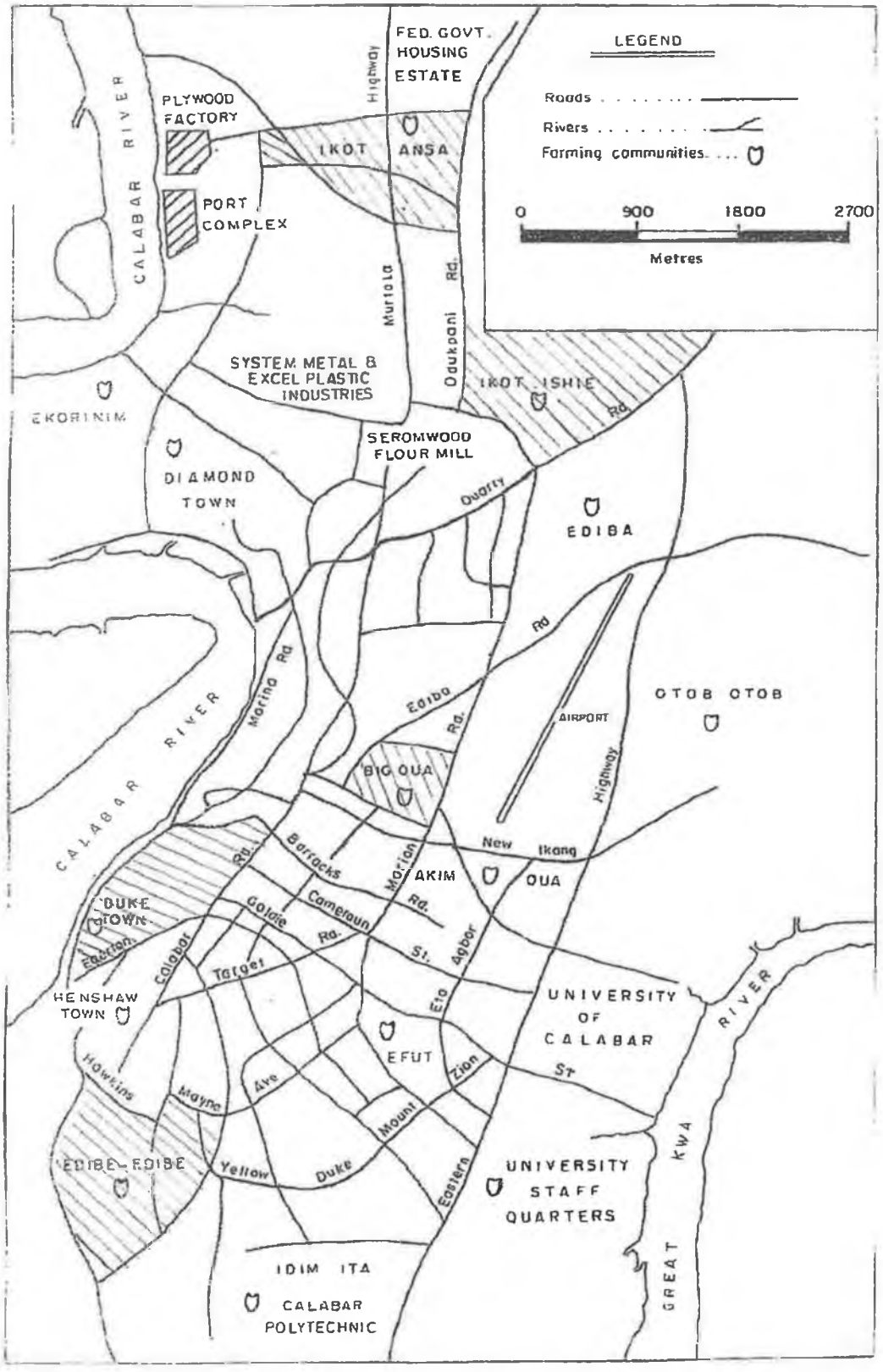
Tesco-Kotzi (1973) states that the earliest known record of slave trade between English traders and the people of Calabar is said to have taken place at barbot in 1698. The advent of industrial capitalism in Britain and North America brought about the abolition of slave trade and the abolition of slave trade was concluded with the chief of Calabar in 1842. Following this development, Calabar port developed into a centre for palm oil trade. This trade continued up till the colonial era when Calabar, became the first capital of Nigeria, however this status was lost to Lagos in 1901 and since then Calabar gradually lost out as a leading trade centre.

Figure 3:9 Cross River State Map showing Calabar (shaded)



Source: Calabar Municipal Map

Fig 3:10 Map showing sampled community in shaded area.



Source Calabar Municipal Map.

CHAPTER FOUR

4:1 Result Analysis of Questionnaire and Interviews

Result Analysis:

In this chapter, I will discuss the result of the sampled population from questionnaires distributed and transcripts from interviews conducted as part of the data and information gathering process. The analysis of the sampled population will explain a detailed breakdown of each question answered, with figures showing diagrams in charts. The next 40 pages detail the result and analysis of the questionnaire. The chapter will also detail the hypothesis testing and result. The result and analysis from the data derived will form part of the research findings and recommendations. Other recommendations will also be based on interviews, options and observation, derived from interviewees in the process of carrying out this research.

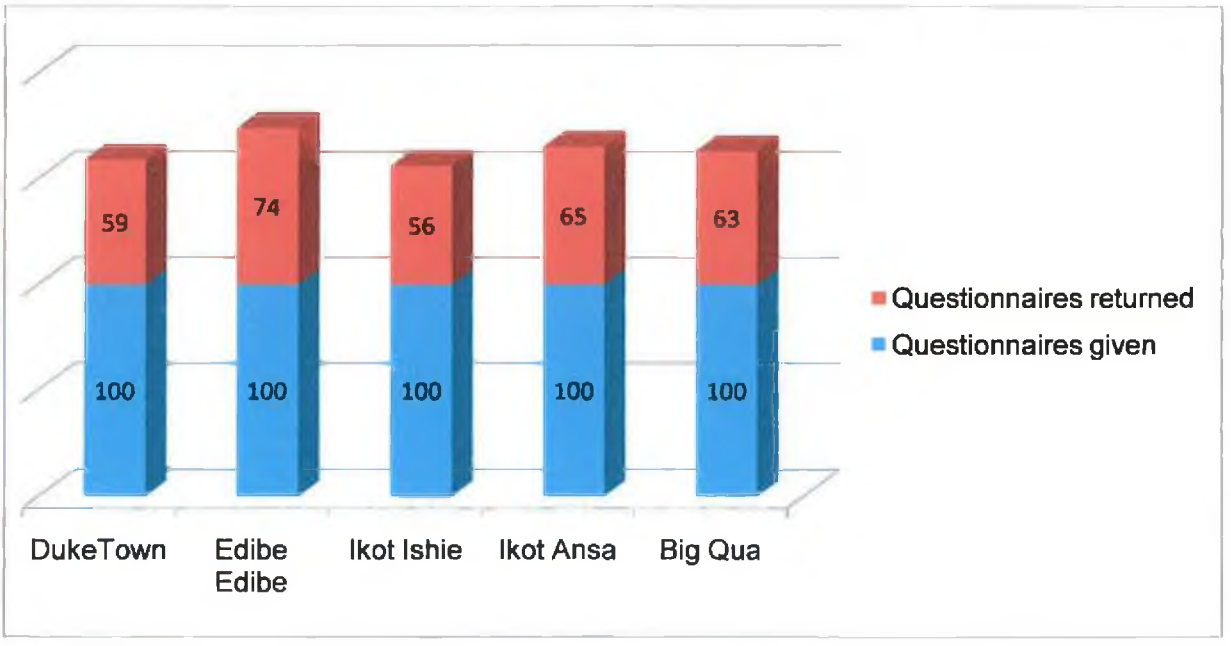
4:2 Description of Sample

The description and analysis of questionnaire from respondents will appear on the following pages the way the way it appears on the questionnaire distributed to give clarity and easy understanding to readers who might want to understand the breakdown of each individual question from the questionnaire.

Questionnaires distributed and returned by Communities

Total of educational districts participating	5
Total number of questionnaires	500
Total questionnaires to each district	100
Total of questionnaires returned	350
Total valid questionnaires	317

Questionnaires distributed and returned by Communities.

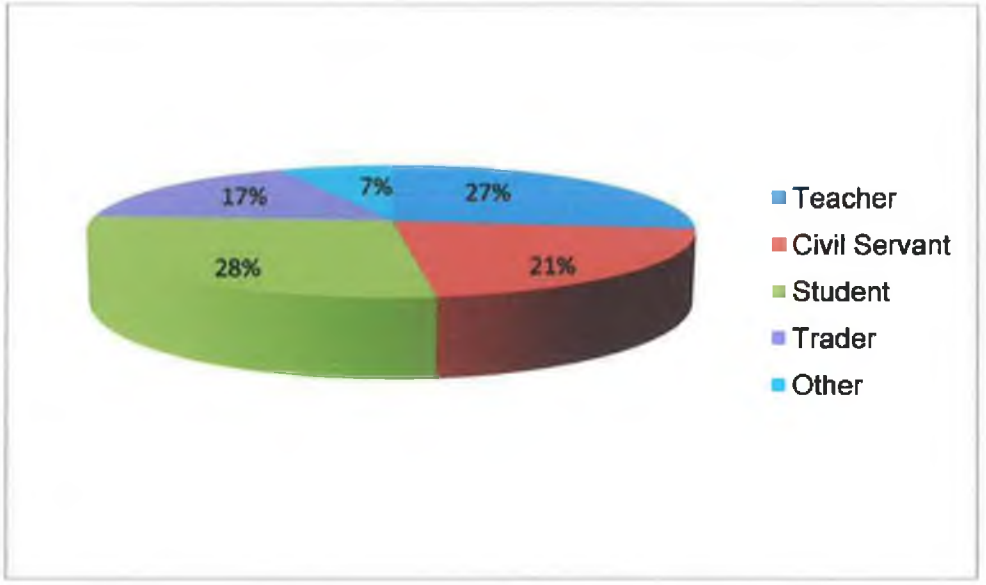


Source: Author's field survey, May 2010.

What is your occupation?

Going by the figure obtain from the questionnaire from the sample population. The following result was deduced from the data collected. 27% said they where teachers, 17% where traders, 28% where students, 21% civil servants and 7% specify other occupation. From the data it showed that students made up 28% of the sampled population of valid questionnaire returned. This could be for so many different reasons for example that they are more readily available and willing to answer to questionnaire or the district is more populated by students The occupation make up, could be advantageous in the design and implementation of a technological schemes in rural communities, where skilled manpower could be harnessed in the roll out of different technological platforms and programs, for the development of rural communities.

Fig 4.1.1 Showing the occupation breakdown of the communities.

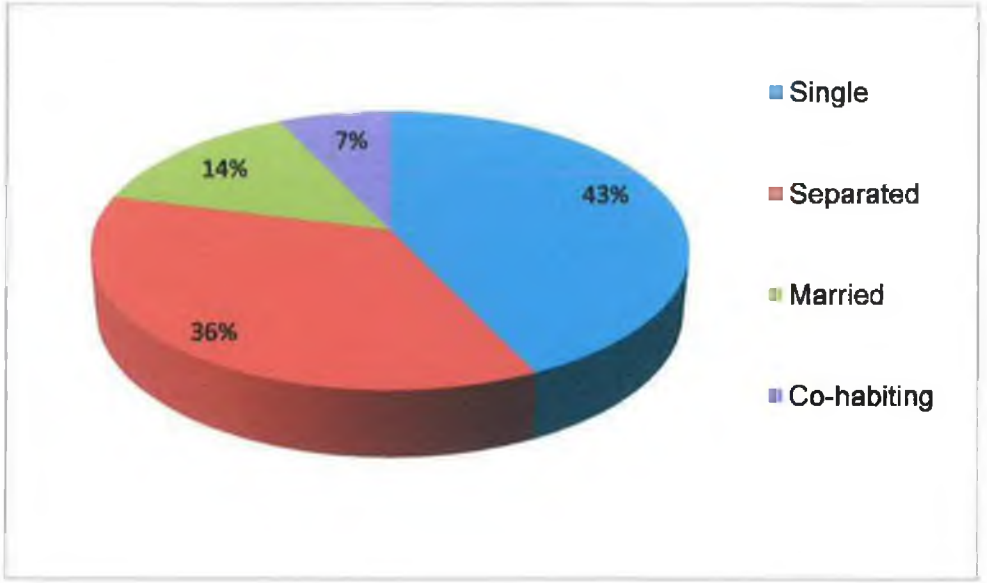


Source: Author's field survey, May 2010.

Marital Status of Migrant?

Marital status can have implications on migration, this can exacerbate structural imbalance in rural communities, when you have many single person who in most cases are more likely to migrate. There is a clear distinction, between those who decides to migrate or not. While the figure shows that 43% single, (unmarried) and separated person 36% constitute the sampled population. This shows that communities samples are still constituted by single and separated person in these communities, this pool of able-body can be harnessed for community development. While 14% of sampled population indicated they were married, and 7% of respondents were co-habiting. The breakdown of the data shows some significant differences in the marital status of migrants.

Fig 4.1.2 Showing marital status of migrant.

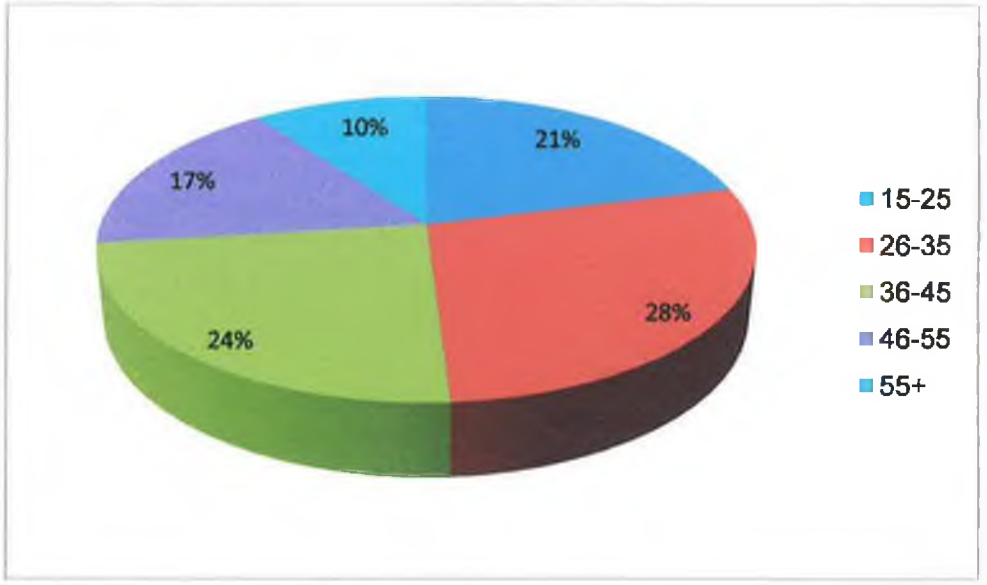


Source: Author's field survey, May 2010.

Indicate age bracket?

Age has a very significant role to play in Migrational Brain Drain because it is the young that are more likely to migrate; it is even more important where educated and skilled persons are involved. The sampled population indicates the following, 21% are 15-25 years, 28% are 26-35 years. 24% are 36-45years. Other age categories shows 17% are 46-55 years, and 10% are 56+ age bracket. The age bracket above shows a large concentration of young people within the samples population that can be used as a catalyst for change to help implement technological changes that will be needed for skill and knowledge transfer, and can form the core for any social development.

Fig 4.1.3. Showing age bracket in sampled communities.

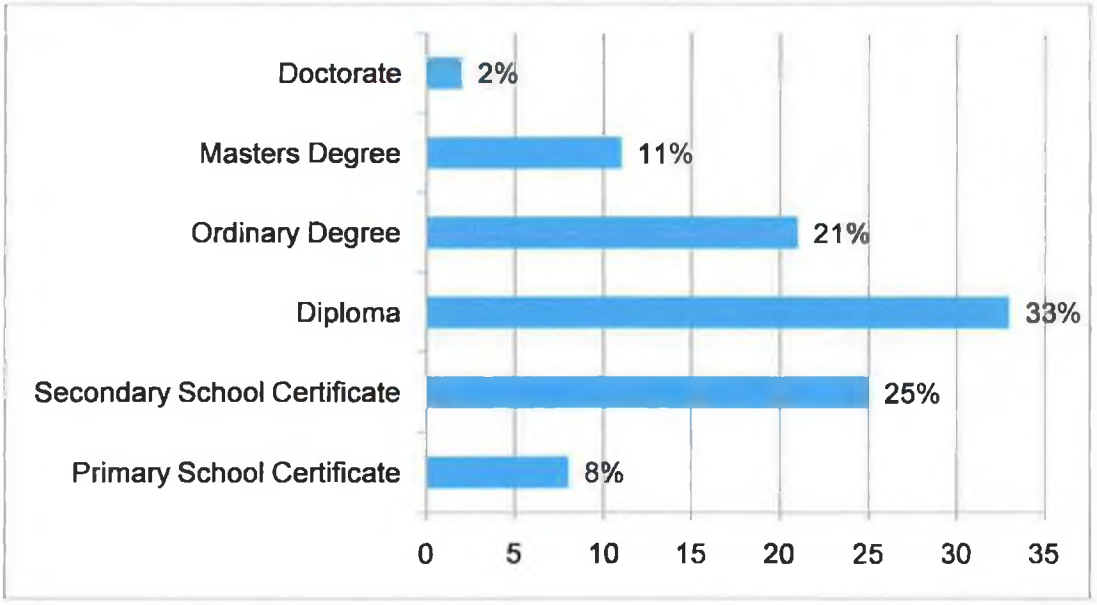


Source: Author's field survey, May 2010.

Level of Education?

According to Makinwa (1983), education plays a significant role in Brain Drain. Although the level of education of migrants in Calabar did not show a sharp contrast, as shown by figure 4:1:4. below 8% of respondents are primary school certificate holders, 25% secondary school certificate holders, 33% holds a diploma, ordinary degree 21%, masters degree 11% and doctorate degree 2%. The breakdown of the sampled population highlights an interesting figure, when you add up all those with diploma and higher degree from percentages of sampled population we will have 93% concentration of highly qualified people in these communities, which can form the nucleus of any social and technological change.

Fig 4.1.4 Showing the educational level in the communities.

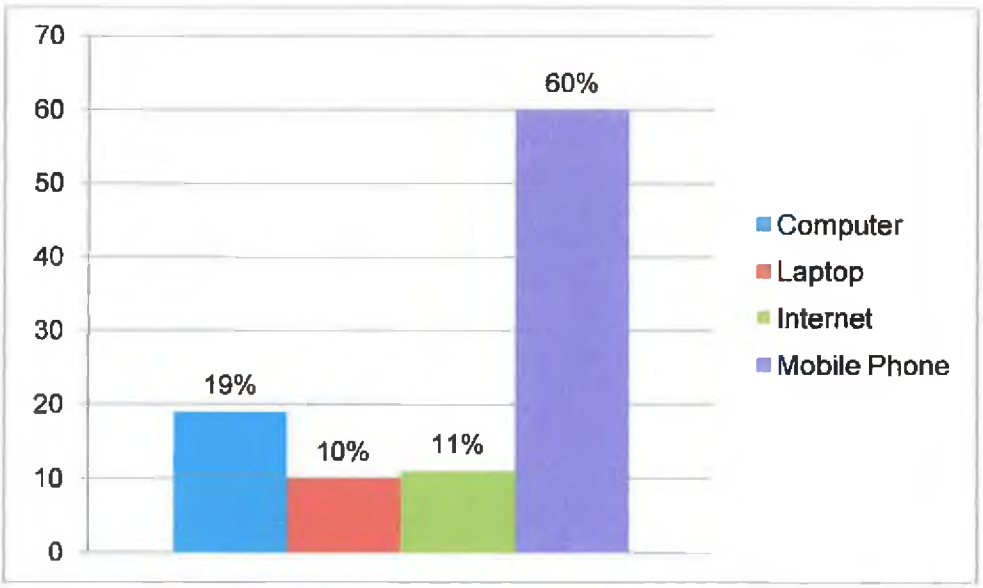


Source: Author's field survey, May 2010.

Do you have any of the modern technologies?

This question was asked to elicit information regarding the ownership of modern technologies such as computer, mobile phone and internet facilities. 60% of respondents have mobile phones, 19% of respondents have computers, 10% of respondents have laptops and 11% of respondents have internet. As technologies become more affordable, more rural dwellers own computers and mobile phones. These open an avenue for the implementation of a technological strategy in rural communities.

Fig 4.1.5 Showing ownership of modern technologies.

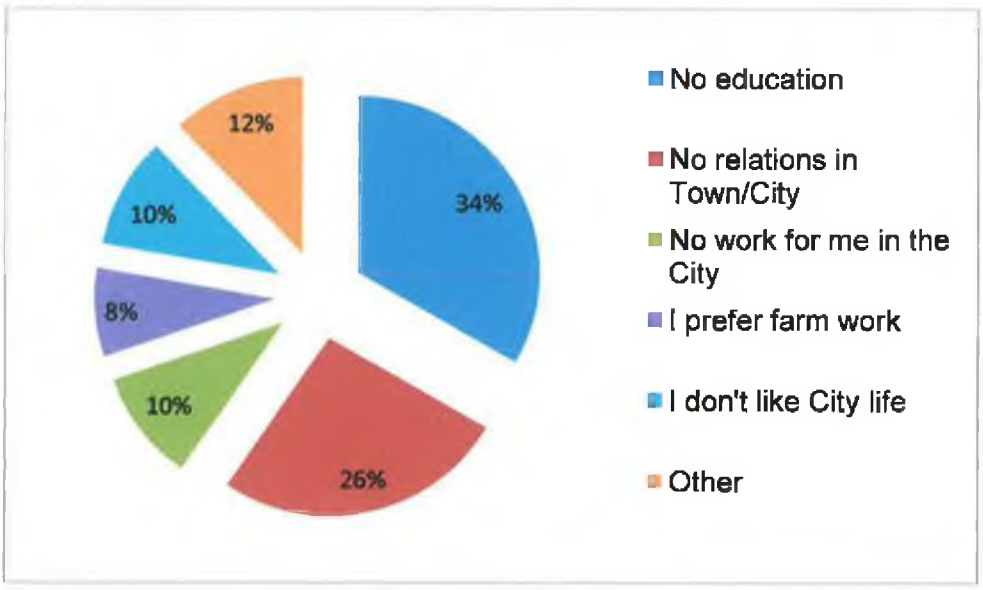


Source: Author's field survey, May 2010.

Why have you not migrated out of your community?

The migrant decision not to migrate out of his or her community is a combination of many factors which exists or deters rural Brain Drain amongst the communities. About 34% of respondents did not migrate because they are not educated, 26% said they did not migrate because they did not have relatives in urban areas. While 10% of respondents said there is no work for them in the cities. Another 10% did not like city life. 8% of respondents prefer farm work. 12% of other respondents have not migrated because of personal reason like illness, home carer etc.

Fig 4:1:6 Showing why some people have not migrated.

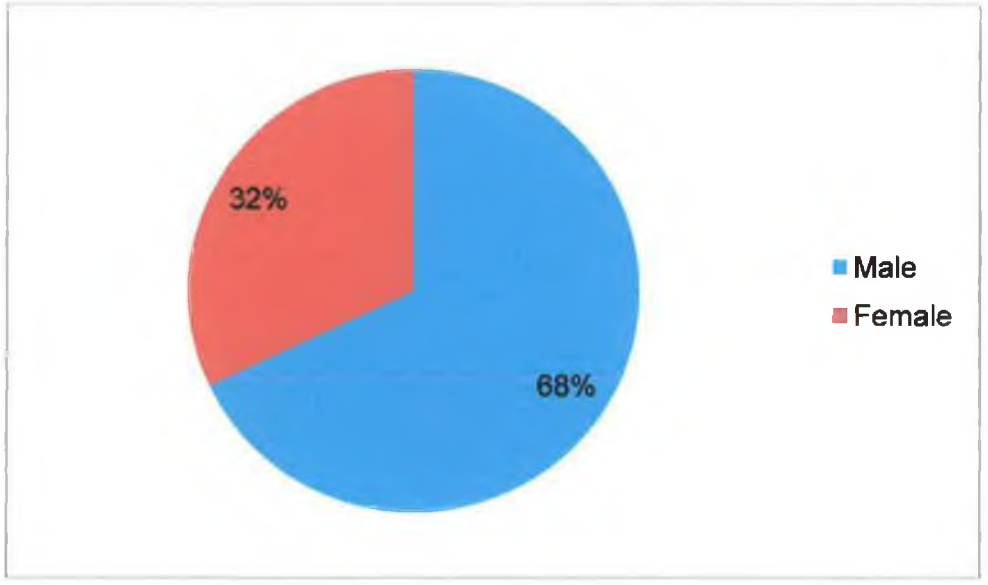


Source: Author's field survey, May 2010.

In your opinion who is more likely to migrate?

The opinion of respondents on what gender is most likely to migrate, 68% of respondents said male while 32% of respondents said female. From the opinion of respondents it is clear that more males migrate than the female gender. This skews the gender balance in rural communities, hence affecting the number of male to female teachers and educator's ratio in rural schools. The gender distribution of migrants has implications on education which is predominantly made up of females although female are joining in large numbers to migrate.

Fig 4.1.7 Showing opinion of respondent on what gender is likely to migrate.

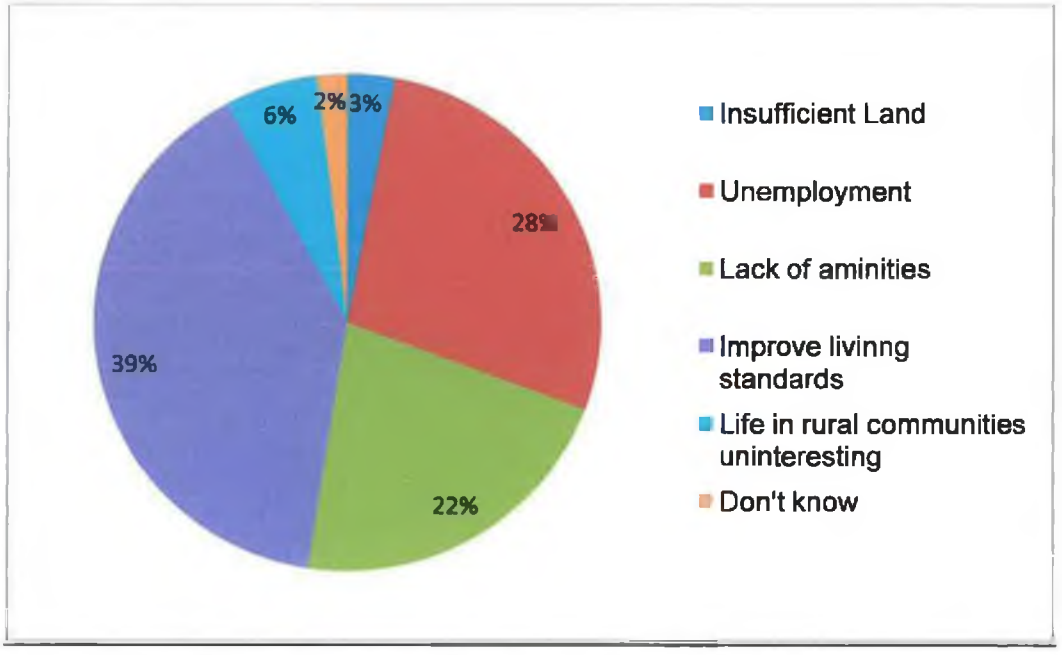


Source: Author's field survey, May 2010.

Why do you think people migrate?

It is empirically clear that the search for economic betterment plays a major role in rural urban migration. In the words of Mitchell (1959) and Gugler (1969) economic factors appear to be a sufficient condition. The reason respondents gave for migration was diverse, some with multiple of reasons why some with one reason. 39% will and have migrated for improved living standards, 22%migrated for lack of amenities, 28% for unemployment, 6% migrated because they found life in rural community uninteresting, 2% said they don't know.3% of respondents migrated due to lack of land. It is interesting to find out that lack of amenities and non unemployment are the highest push factors while people migrate which can also be linked people trying to improve their living standard.

Fig4.1.8 Showing respondent reason why people migrate.



Source: Author's field survey, May 2010.

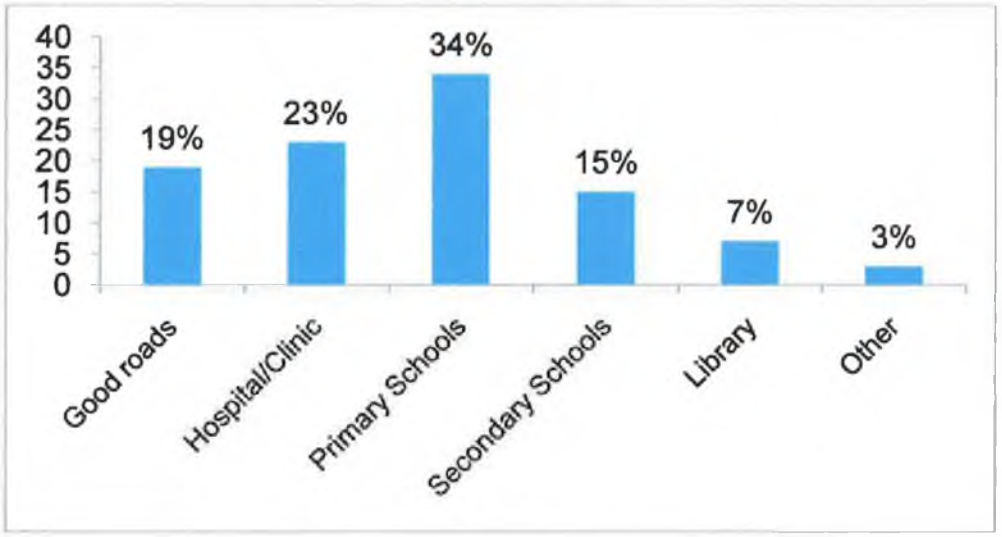
In your opinion do you think Brain Drain affect educational development?

In order to gauge the opinion of the communities, on their taught on Brain Drain and its implication on education, the above question was asked. The opinion from most respondents was that Brain Drain was adversely affecting the educational sector. With most respondents indicated that highly skilled professionals such as teachers and doctors are migrating, out of the communities because they are highly sort after else-were getting better pay. According to Makiwa (1983) the unequal distribution of social infrastructure and services in favour of urban areas underscores the realities why the Brain Drain is so prevalent.

What amenities do you have in your community?

On question nine which dealt with the social amenities, respondent had more than one reason and therefore the responses may amount to a figure larger than the sample size of 317. 34% of respondent said there are primary schools in their locality, 23% hospital/clinic, 19% good roads, 15% secondary schools, 7% library and 3% indicated other amenities.

Fig: 4.1.10 Showing amenities of communities sampled.

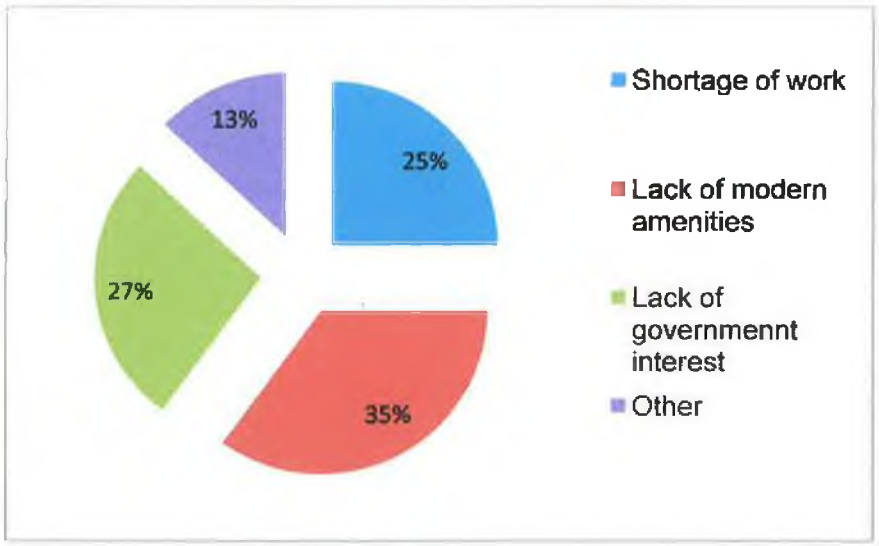


Source: Author's field survey, May 2010.

What are the problems faced by community?

An important determinant of Brain Drain in rural communities, for educators, teachers and technology experts is the availability of resources. The absence of modern amenities in the sampled communities was one of the indicators as to why people migrate. Going by the breakdown of the figures, 27% respondents emphasised the lack of government interest in the development of the rural areas as one of the problems facing the communities. 35% stated the lack of amenities as the biggest problem in the rural areas, while 25% said shortage of work and 13% mentioned others which included lack of companies and industries.

Fig 4.1.11 Showing problems faced by sampled communities.

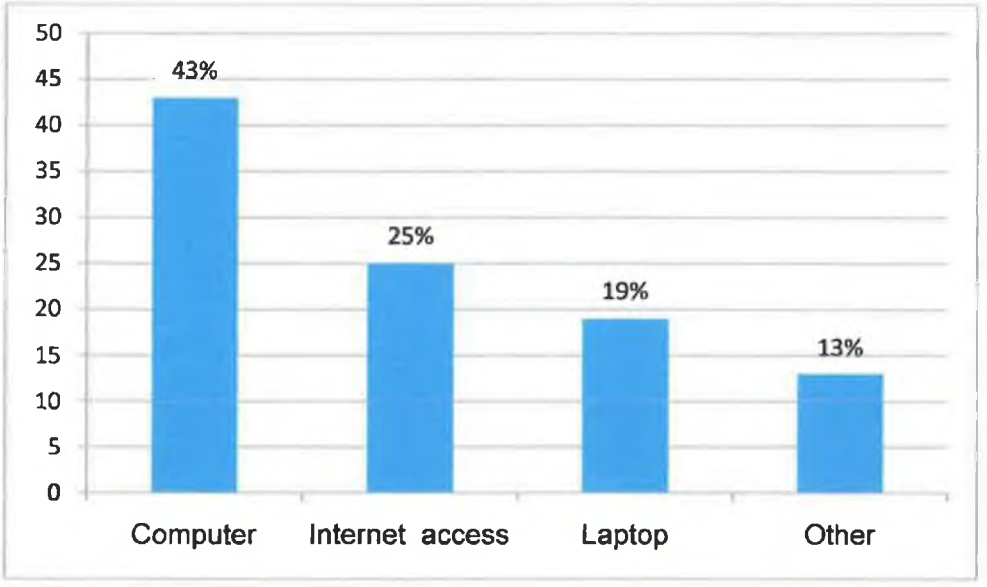


Source: Author's field survey, May 2010.

What type of technology would improve education in your community?

This was an open question for respondents to specify what type of technology that would aid educational learning in their community. The date from most respondents indicated multiple answers. The breakdown shows the following answers of respondents. 25% would like greater access to the internet, 43% said more computers, 19% of respondents said laptops would greatly improve education and 13% of others said greater access to radio, Smartphone's and television.

Fig 4.1.12 Showing respondent opinion on what technologies could improve education.

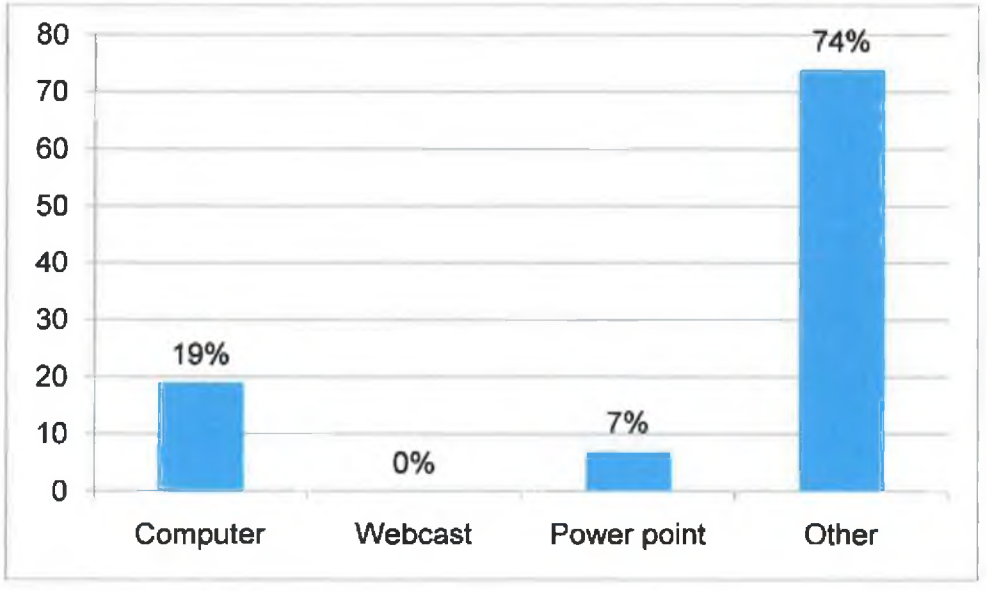


Source: Author's field survey, May 2010.

What types of technology does your teacher use to deliver classes?

Multiple responses were given by respondents on this question, 19% said computers, 7% said course work was delivered on power point and 74% of others said teachers used a mixture of recorded lectures and educative programmes on television and radio platforms. The most commonly used technologies in delivering learning in most rural communities is the use of recorded lectures which is then delivered on radio and television sets for the students. Although the use of computers is wide spread, they are not used for the delivery of course work but for information storage and administrative work. No respondents surveyed have used webcasts.

Fig 4.1.13 Showing types of technologies used to deliver coursework.

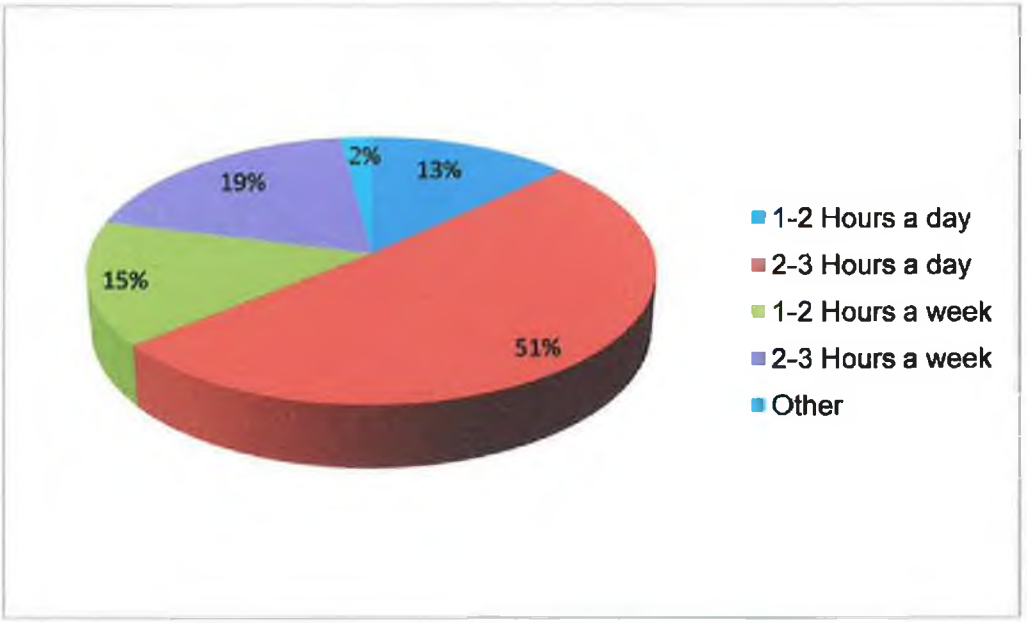


Source: Author's field survey, May 2010.

How often do you access the internet for class?

The data from the above question throws up a lot of interesting statistics, as the respondents with internet access did exceed expectation in most rural areas surveyed. The data showed internet access for 1-2 hours a day was 13%, 2-3 hours a day was 51%, 1-2 hours a week 15%, 2-3 hours per week 19% and 2% for others respondents in terms of access to internet for class. The above data exceeded expectation owing to the fact, more and more rural dwellers were accessing the internet.

Fig 4.1.14 Showing accessing to the internet before classes.

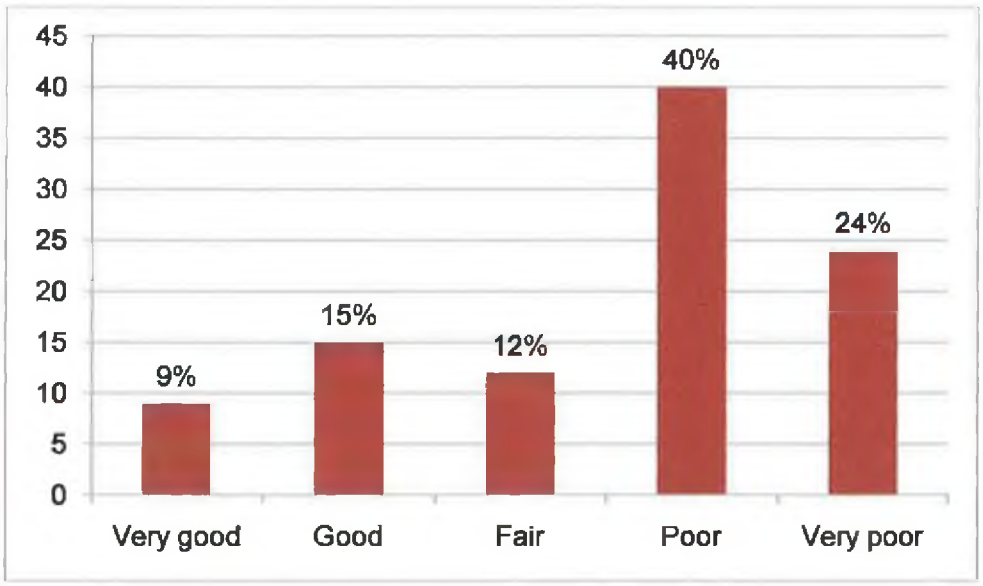


Source: Author's field survey, May 2010.

How reliable is your internet service?

The following result on how reliable rural internet service shows that there are problem besetting the use of the internet in educational learning in rural Nigeria. The breakdowns of the figures from respondents are as follows. Very good internet access at 9%, good internet access 15%, fair 12%, poor 40%, very poor 24%.The reliability of rural internet is very important to the gathering, application and dissemination of information to aid learning. The internet as a resource should be seen as a vital component in the enrichment of the educational sector which would help in the process of knowledge acquisition and delivery of education.

Fig 4.1.15 Showing how reliable internet service is.

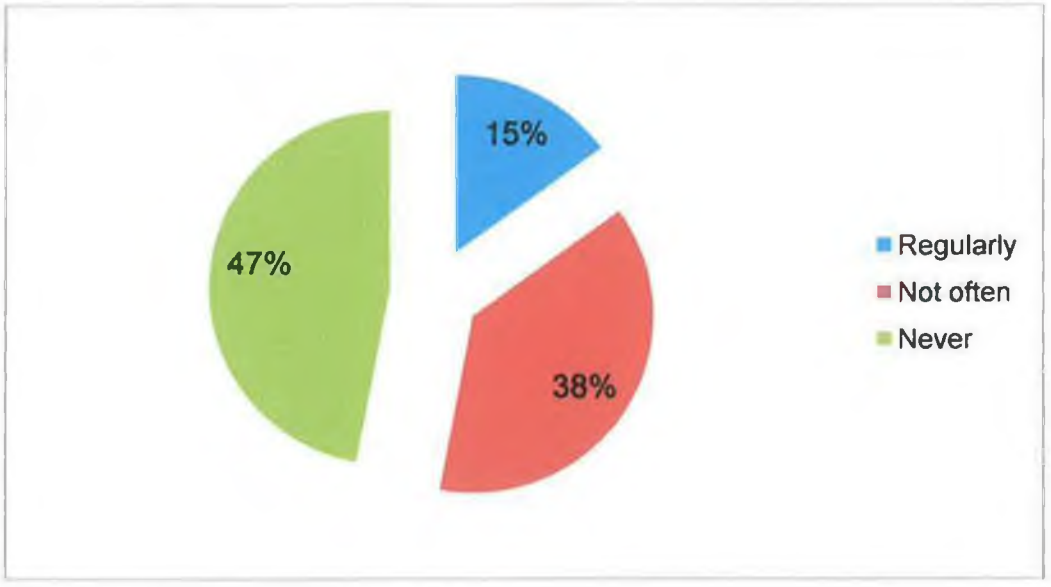


Source: Author's field survey, May 2010.

How often is technology hardware upgraded in your school?

The result from the respondents for the above question are as follows, 15% respondents said regularly, 38% respondents said not often and 47% of respondents said hardware is never upgraded. While the use of technologies is gradually been introduced, they are still not a common practice in rural Nigeria, the use of modern technologies such as computer and the internet in schools, are gradually been introduced in schools as an aid to educational learning. The schools that use them hardly upgrade their facilities, owing to the high cost of maintenance and lack of government funding in this area.

Fig 4.1.16 Showing how often technology hardware are upgraded in school.

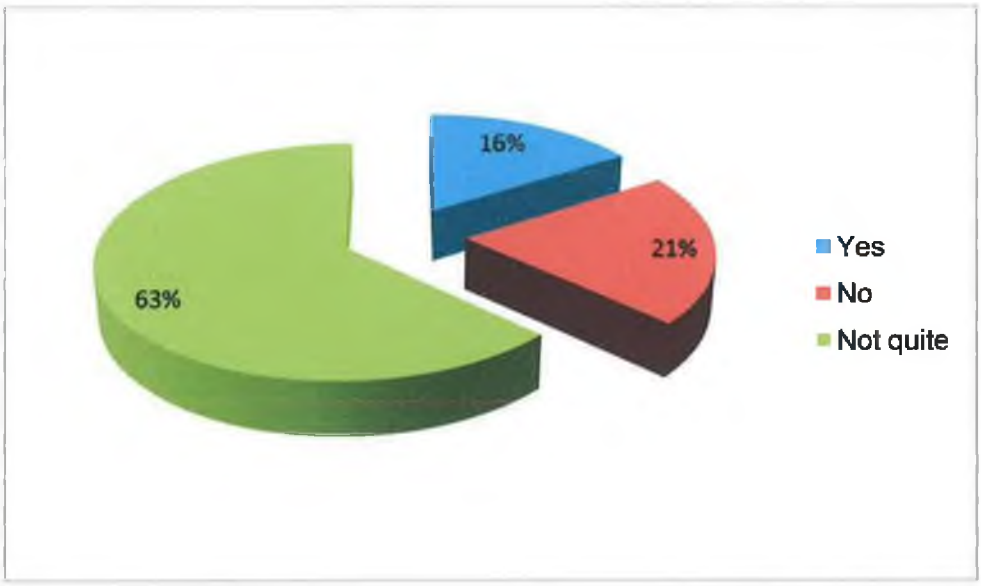


Source: Author's field survey, May 2010.

Do you see Brain Drain as a problem to the educational learning in your community?

16% agreed that Brain Drain is a problem that is hindering educational development 21% said no, that Brain Drain is not a problem, while 63% said not quite. A large number of respondents agreed that Brain Drain is a particular problem in rural Nigeria. This has to be checked before any kind of development could take place. As the rural communities, need this highly skilled manpower if there are to be any meaningful development.

Fig 4.1.17 Showing respondent's opinion on Brain Drain as a problem affecting education.

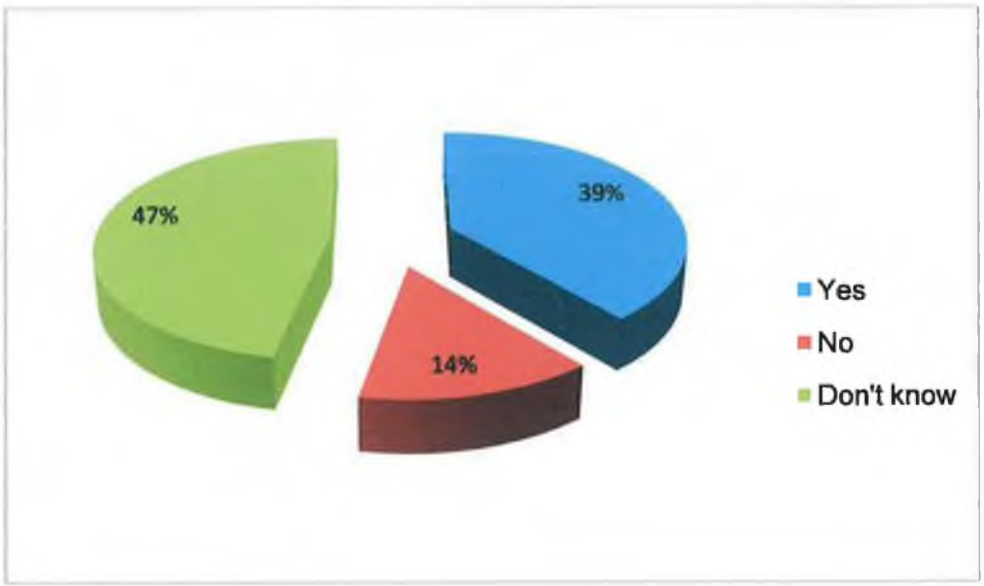


Source: Author's field survey, May 2010.

Can technologies reverse the effect of Brain Drain in your community?

As the need for technological advancement continues to dominate the political discourse in Nigeria there are people who do think technology cannot limit or reverse the effect of Brian Drain, their views steams from the fact that the problem has been left for so long for technology to have an impact. The following data was deduced 39% said yes, 14% no and 47% don't know to the use of technology in limiting the effect of Brain Drain in rural communities. While 39% respondents to this question agreed that technologies could play a part in the limiting of Brain Drain. 14% where unsure how technologies' can be used to limit the effect of Brain Drain in rural communities and 47% said they don't know if technologies could reverse the effect of Brain Drain in rural communities.

Fig 4.1.18 Showing response to question on reversing Brain Drain through technology.



Source: Author's field survey, May 2010.

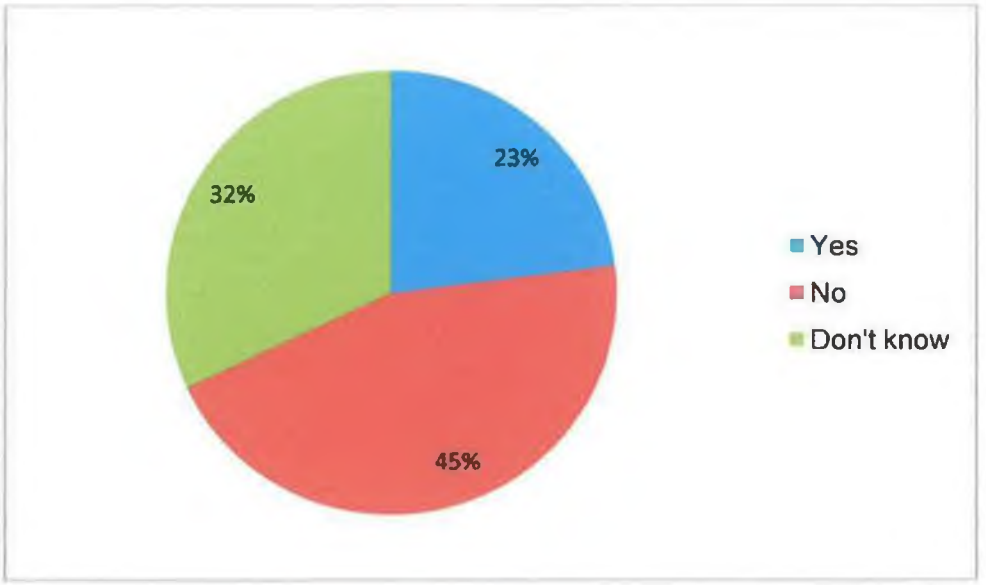
If yes, in what way?

However, the importance of domestic technology innovation could be a critical factor in the development of rural communities. Despite their acquiring technological platforms and implementing technology from different frontiers for domestic innovation which could be an important factors for various reasons: International technology absorbsion may be slow to implement due to the localization of knowledge acquisition. Importing foreign technology and innovation may be good but sometimes may not properly address domestic knowledge and skill development that are critical for developing capacity building that can absorb foreign technology. However, the most important form of innovation for a poor country is likely the adoption of technologies developed elsewhere (World Bank, 2008). In other words, the greatest opportunities for growth in Nigeria rural communities lie in moving towards a structured technology transfer of knowledge through cooperation from the international communities. Highly skilled domestic innovations are likely to be central to this catch-up process. Hence 39% of respondents think technologies could play a big part if Brain Drain in education and rural communities are to be limited. Most respondent that indicated yes in the question 4.1.18. Mention some form of technologies such as the internet, computer and making the teaching and adaptation of technologies compulsory in school in question 4.1.19.

Do you think the government is doing enough to tackle the problem of rural urban Brain Drain?

23% of respondents thought the government were doing enough to tackle the problem of Brain Drain. A higher 45% of respondents felt the government are not doing enough while 32% did not know or would not say.

Fig 4.1.20 Showing respondent opinion what government is doing to tackle the effect of rural urban Brain Drain.

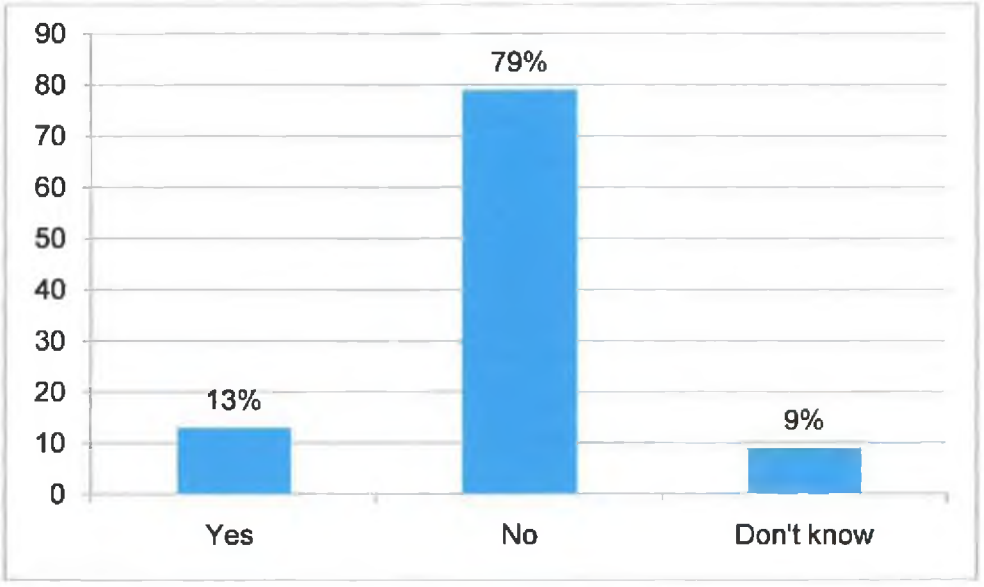


Source: Author's field survey, May 2010.

Do you think the government is encouraging the use of technology in Schools and Colleges?

The data shows that 13% respondent said yes, 79% respondents said No and 9% of respondent don't know. In answering this question, the respondent where precise in their answers on what they think of the government effort in the implementation of a technological strategy for school.

Fig 4.1.21 Showing respondent's opinion on government encouragement on the use of technologies.



Source: Author's field survey, May 2010.

What do you think the Government should do to reduce rural urban Brain Drain?

From the above analysis, we can see that many factors operate together in a complex intricacy to influence Brain Drain among people in the study area. They range from economic through cultural and social factors. For instance level of education which is a cultural factor is one of the important factors as to whether the person migrates or not. The implication of their various reasons why they migrate is that, there is conspicuous absence of basic infrastructure that could sustain these highly skilled professional to remain in their community.

Further breakdown of result finding and comparisons

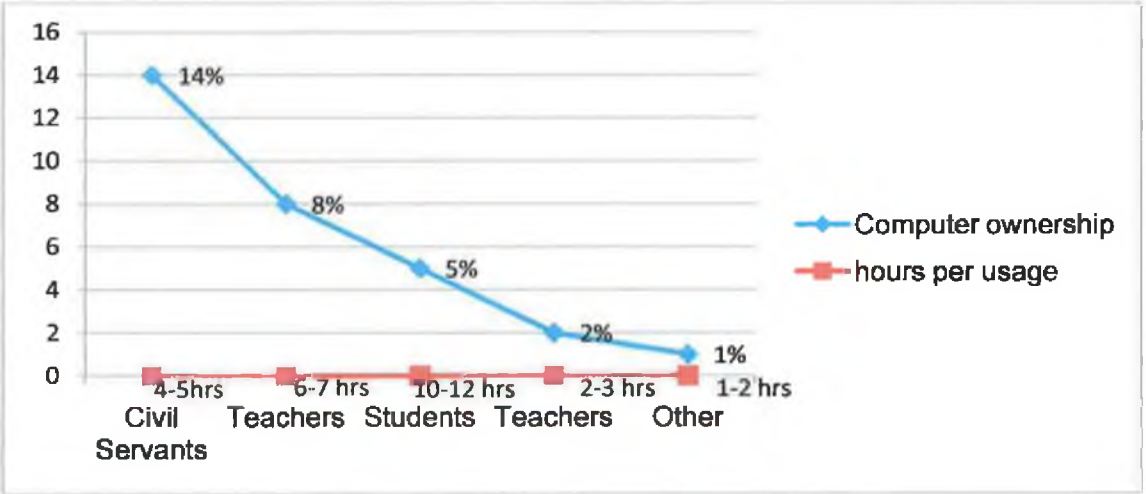
Following a further in-depth analysis and comparison of sampled population these are the result finding.

Comparison of computer ownership internet usage by occupation.

Occupation	computer ownership %	internet usage per week
Civil servant	14%	4-5 hours internet usage per week
Teacher	8%	6-7 hours internet usage per week
Students	5%	10-12 hours internet usage per week
Traders	2%	2-3 hours internet usage per week
Others	1%	1-2 hours internet usage per week

From the above data the following was deduced, civil servant from the sample population owned more computer of all the different occupations surveyed with 14% while students with 5% computer ownership use more of the internet, the hours spent by students per week on the internet is 10-12 hours.

Chart showing occupational breakdown of computer ownership and internet usage.

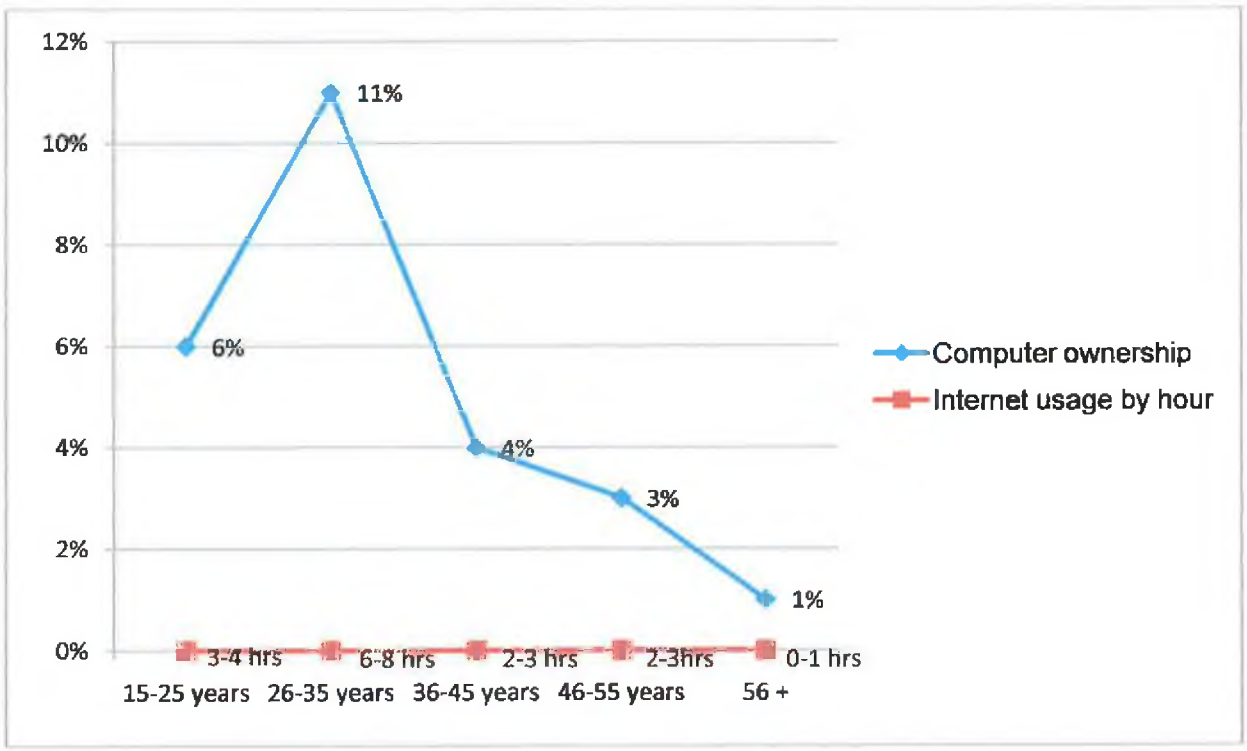


Source: Author's field survey, May 2010.

Comparison of age breakdown of computer ownership and internet usage.

Age groups	Computer ownership %	Internet usage per week
15-25 years	6%	3-4hours
26-35 years	11%	6-8 hours
36-45years	4%	2-3 hours
46-55years	3%	2-3 hours
56+years	1%	0-1 hour

Chart showing age breakdown of computer ownership and internet usage



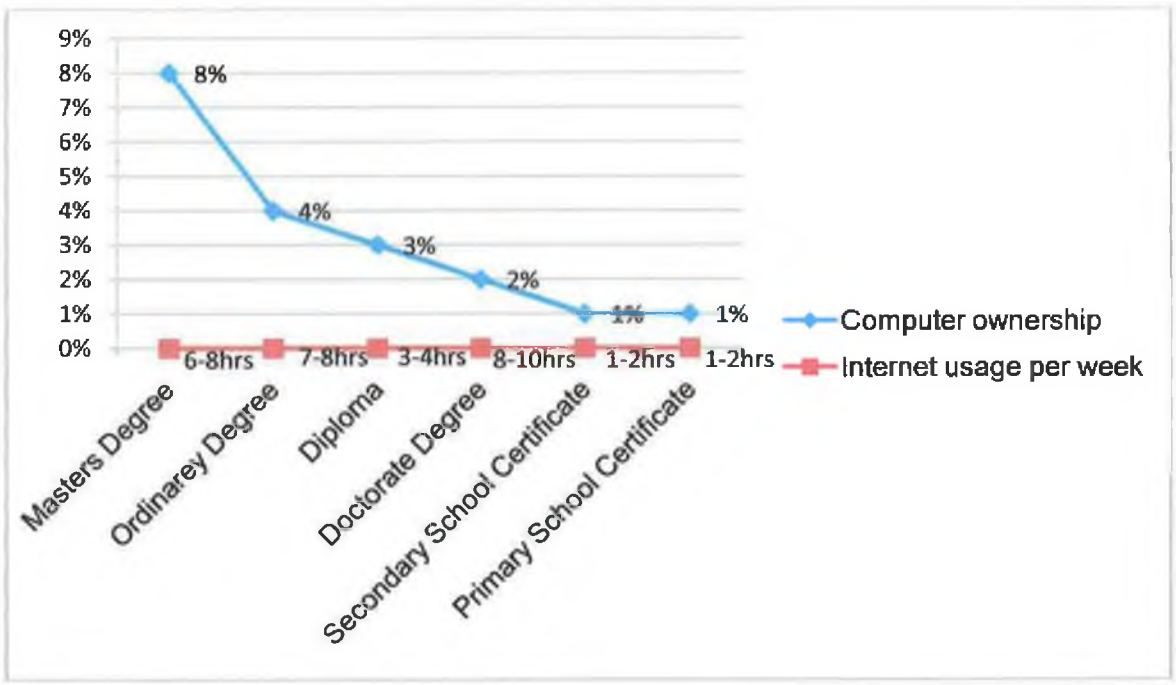
Source: Author's field survey, May 2010.

The age breakdown of computer ownership and internet usage, throw up some interesting data from the sampled population with the 26-35 age bracket owned more computers than any other age group and also use more of the internet per week.

Educational qualification breakdown of computer ownership and internet usage

Qualification	computer ownership %	internet usage per week
Master degree	8%	6-8 hours per week
Ordinary degree	4%	7-8 hours per week
Diploma	3%	3-4 hours per week
Doctorate degree	2%	8-10 hours per week
Secondary school certificate	1%	1-2 hours per week
Primary school certificate	1%	1-2 hours per week

Chart showing qualification breakdown of computer ownership and internet usage.



Source: Author's field survey, May 2010.

Educational breakdown of computer ownership and internet usage of sampled population show from the above date, that 8% of masters degree holder owned more computers than any other qualification holder and use between 6-8 hours of computer usage, while doctorate degree holders with 2% computer ownership use 8-10 hours of internet per week followed closely by ordinary degree holders whose computer ownership was 4% and internet usage where between 7-8 hours a week.

4:4 Summary of transcript from interview conducted with two school proprietors and an educational commentator on the effect of Migrational Brain Drain on rural communities in Calabar, Conducted in Nigeria

As I continued my research to find out opinion and views of educators, teachers and stakeholder on the effect Migrational Brain Drain was having on the educational sector in rural communities and what strategy could be put in place to help limit the impact of this kind of migration. I conducted the following Interviews, summarizing their answers. The interviews were conducted separately. Concerns are being expressed in some quarters over the policies and the approach of the Federal Government towards leading the nation to the path of educational recovery, the efforts of government, in implementing a technological strategy which would aid education with particular emphasis on rural communities. The needs for educational strategy tailored towards ensuring that local schools develop and retain skilled teachers and educators. These are some of the views put forward by Mrs. Unigwe A.O, the proprietor of Narelville Group of Schools. Mrs Ola Raffer, proprietor Learning Field Comprehensive School. Mr Nnamdi Ofor, an educational commentator. In the interviews with me, they explained and examined various issues affecting schools in rural communities and how to implement technology amongst other things, including the rate at which the country loses skilled teachers to other economies. They lamented the negative implication on the per capital income of Nigerians.

Q1 is there any define technological strategy for education or part in the school curriculum in Nigerian?

A1: yes there is a mention of technology as part of science education but not a defined strategy and as for technology in school curriculum, the answer will be no as schools just implement technological strategy as they go to fit their requirement said (Mr Nnamdi Ofor).

Q2 what kind of technologies will schools use. As you said to suit their requirement?

A2 the most notable technologies, used in schools in Nigeria, are computers, laptops, Smartphone's, c d, television and radio educational materials (Mrs Ola Raffer).

Q3 is Migrational Brain Drain having effect on education?

A3 that is one of the biggest problems we are facing in our educational system, the loss of skilled teachers and educators to Migrational stream (Mrs Unigwe A.O).

Q4 what strategy has the government put in place to reduce or limit the loss of this highly skilled manpower in schools?

A4 there have been some ad hoc measure by the government of the day to implement a strategy to limit the effect of Brain Drain by setting up review groups to look critically at the problems that are the root causes of drain brain and come up with the recommendations for implementation. But most recommendation have not been fully implemented by the government hence the persistent problem of the loss of highly skilled manpower leaving the educational sector (Mrs Unigwe A.O).

Q5 can technologies reverse the effect of Brain Drain on rural communities?

A5 technologies can not reverse the effect of Brain Drain, but can be used in conjunction with a well planned strategy to limit the effect of this kind of migration (Mrs Ola Raffer).

Q6 has any of your staff migrated in the last one or two year?

A6 yes, said .Mrs. Unigwe A.O, the proprietor of Narelville Group of Schools, the (school) has lost 5 staff that have migrated to bigger cities and abroad for better paid employment. We are also finding it hard to replace the staffs that have left. As we do not have the kind of money to retain highly qualified staff. Both the other interviewees agree with this statement.

Q7 what kind of technologies do you use in your school?

A7 we have computer, television, internet and we use some modern medium of communication for example mobile phones. But the schools are limited in the use of this equipment, as they are expensive to maintain, our internet is limited for use once or twice a week because of the cost of running and maintaining this facility. The government is not helping matters as they will not subsidize the schools in the running of this facility. All this is affecting the way we deliver learning to our students (Mrs Ola Raffer).

Q8 in your opinion what kind of technological strategy do you want to see in place in school?

A8 the government in conjunction with all the stakeholder in education in Nigeria should convey a national conference on the way forward for education to look at various ways that education in this country can be streamlined to meet the challenges of the 21st century, and to place more emphasis on technologies as a corner stone of the educational curriculum. If we are to meet the need of teaming numbers of students, who are aspiring to enter Schools and Colleges all over the country. Also there should be a national wage review for all teacher, educator and administrator in all schools in the country to look at how to numerate these highly qualifies educators so as to limit the large number leaving the educational sector and also attract new number skill into these sectors said Mr Nnamdi Ofor. Mrs Ola Raffer also echoed the same thought.

Q9 what do you think Government should do for rural urban Brain Drain?

A9 the introduction of free education throughout all levels and the wage structure should be looked at. This is very important if we are competing with other societies in the world. Infrastructural development should be put in place in all rural communities for example broadband. Resourcing the school with technical knowhow, by making it compulsory that every rural school should employ a technologist funded by the government as part of the scheme to develop a more progressive educational sector (Mrs Ola Raffer).

Q10 do you think communities can tap into the experiences of skilled of migratant who have migrated out of the rural communities?

A10 Yes there are so many way that the country as a whole can gain from the skill and experiences of the people who have migrated. By inviting Nigeria in Diaspora to come back home and offer their knowledge skill and experience they have gain abroad to the upliftment of their fatherland (Mr Nnamdi Okafor).

4:5 Hypothesis testing

In this chapter, therefore I wish to further highlight and analyse such observed phenomena with the hypothesis that the greater the number of rural-urban migration the lower the standard of education (hypothesis one) and there is a significant relationship between Brain Drain and poor educational development (Hypothesis two). My findings will be based on the result of the analysis and discussion that follow the statistical test.

Two variables are to be used in the Pearson's product moment co-efficient formula. They are the 'x' and 'y' variable, with the 'y' variable depending on 'x'. Therefore 'y' stands for the types of technologies used while 'x' is rural-urban Brain Drain. The values of the two variables are the number of respondent in each case.

The Pearson's product moment co-efficient formula

$$r = \frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sqrt{(\sum X^2 - \frac{(\sum X)^2}{N})(\sum Y^2 - \frac{(\sum Y)^2}{N})}}$$

Where:

rxy= correlation co-efficient.

x = respondent for rural-urban Brain Drain.

Y = type of technologies used.

HYPOTHESIS 1

HO: No relationship between Brain Drain and the use of technologies.

HI: There is statistical relationship between Brain Drain and use the of technologies.

Calculation to test hypothesis 1 to find out if there are correlation.

area	Rural Urban Brain Drain	Educational development
1	25	18
2	50	10
3	21	14
4	32	10
5	20	10
total	100	75
	729	361

r = 0.13871

t = 0.242594

p =0.82396

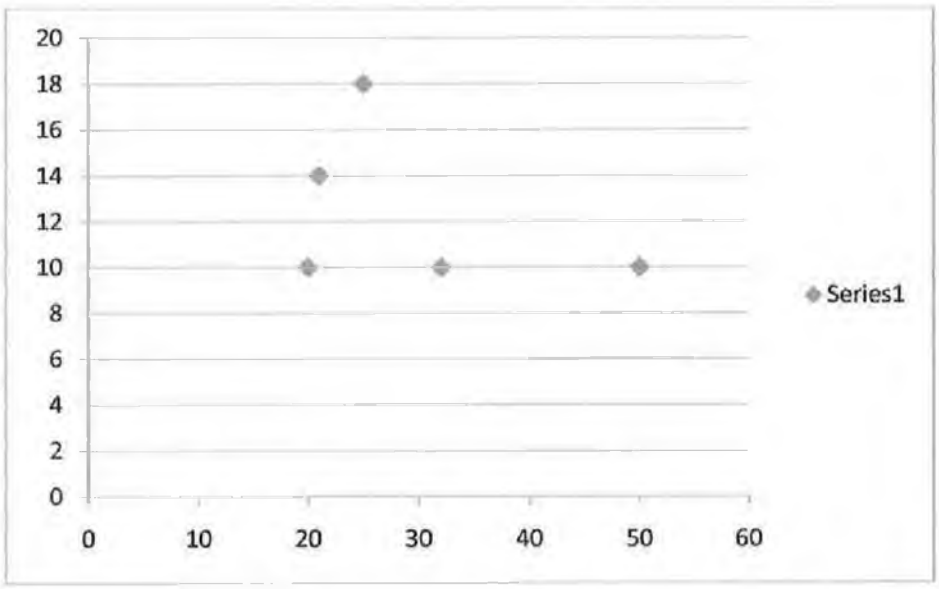


Chart from calculated data above.

4:6 Interpretations

Applying the Pearson's product moment co-efficient formula, a correlation co-efficient of -.403 was obtained such a correlation co-efficient means that there is a weak positive relationship between Brain Drain and types of technologies used.

In other words, there is a negative correlation, the higher the technology, the lower the migration. However, while the correlation is pretty good it is not statistically significant, a co-efficient of determination of 16%. (-.403), means that about 16% of the variation of the types of technologies is explained by rural urban Brain Drain in this study area.

To test the significance of the correlation co-efficient obtained above, we will have to make use of the, 't' –test given by:

$$t = \frac{\overline{x} - \mu_0}{\frac{s}{\sqrt{n}}},$$

We therefore formulate our hypothesis

HO = correlation is not significant

H1 = correlation is significant

t =0.242594

Since the calculation value does not fall within the critical region t>t~/2 = 3.182. We cannot reject the null hypothesis. The data does not support the claim that there is a relationship between use of technology and migration.

HYPOTHESIS 2

HO: There is no relationship between Brain Drain and educational development.

HI: There is a significant relationship between Brain Drain and educational development.

Calculation to test hypothesis 2 to find out if there are correlation.

area		Rural Urban Brain Drain	Educational development
	1	25	12
	2	50	25
	3	21	15
	4	32	12
	5	20	10
total		100	75
		729	361

r=.887

t=0.754445

p=0.051

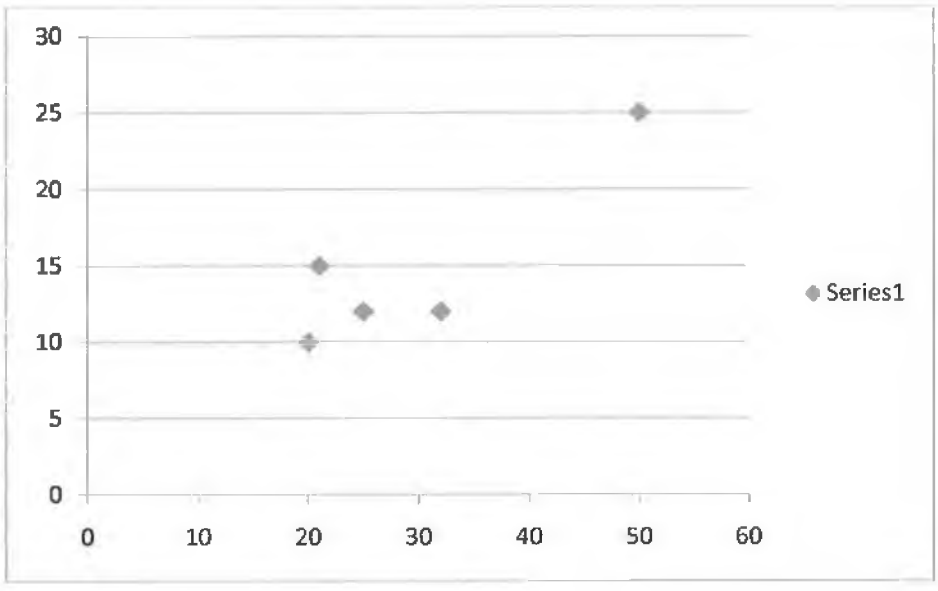


Chart from calculated data above.

Interpretation

Applying the Pearson's product moment co-efficient formula a correlation co-efficient of 0.877 was obtained. Such a correlation co-efficient, means that there is a strong positive relationship between Brain Drain and educational development.

In other words, as the number of respondent for rural urban migration increases, so also are educational development. A co-efficient of determination of 0.877^2=77%.

r=.877

p=.051

There is a significant positive correlation between education and migration. The more education the more migration.

To test the significance of the correlation co-efficient obtained above, we will have to make use of the, 't' –test given by:

$$t = \frac{\overline{x} - \mu_0}{\frac{s}{\sqrt{n}}},$$

We therefore formulate our hypothesis

HO = correlation is not significant

H1 = correlation is significant

t = 0.754445

Since the calculated value does not fall within the critical region t= t</2 = 3.182.hence. There is a significant positive correlation between education and migration, and more education the more migration. We accept the p at 0.051 level of significance.

Chapter Five

5:1 Recommendation Summary and Conclusion

The result and analysis from the data will form part of the research findings and recommendations. Other recommendations will also be based on interview, opinions and observation, derived from interviewees in the process of carrying out this research. From the study above, the causes of rural- urban Brain Drain has been identified. We also note that this kind or pattern of migration has had a negative effect on rural communities which is the basic interest of this research. Following the review and analysis of the impact of rural-urban Brain Drain from data collected, interview and hypothesis testing, the following have been deduced. That Brain Drain causes shortage of manpower, encourages labour wage increase, and disorganizes communal system of education and labour with its adverse effect on capacity utilization, thereby inhibiting educational activity because of the shortage of teachers and educators in rural communities in Nigeria. Based on the negative impact of Migrational Brain Drain, this research has come up with some recommendation based on the finding of this research to reduce the effect of Brain Drain, using current technologies in Nigerian rural communities.

5:2 Result Findings

Following the analysis of the data from the sampled population, the following conclusions were reached. The educational breakdown of computer ownership and internet usage of sampled population shows, that 8% of Masters degree holder owned more computers than any other qualification holders and use between 6-8 hours of computer usage, while Doctorate degree holders with 2% computer ownership use 8-10 hours of internet per week followed closely by Ordinary degree holders whose computer ownership was 4% and internet usage where between 7-8 hours a week. Also the age breakdown of computer ownership and internet usage, throw up some interesting data from the sampled population with the 26-35 age bracket owned more computers than any other age group and also use more of the internet per week. From the sampled population and data analysis the following was deduced, civil servants own more computers of all the different occupations surveyed with 14%, while students with 5% computer ownership use more of the internet, the hours spent by students per week on the internet is 10-12 hours.

As the need for technological advancement continues to dominate the political discourse in Nigeria there are people who think technology cannot limit or reverse the effect of Brian Drain, their views steams from the fact that the problem has been left for so long for technology to have an impact. The following data was deduced from the breakdown of the sampled population. 39% said yes, 14% no and 47% don't know to the use of technology in limiting the effect of Brain Drain in rural communities. While 39% respondents to this question agreed that technologies could play a part in the limiting of Brain Drain. 14% where unsure how technologies'

could be used to limit the effect of Brain Drain in rural communities and 47% said they don't know if technologies could reverse the effect of Brain Drain in rural communities. In other words, the greatest opportunities for growth in Nigeria rural communities lies in moving towards a structured technology transfer of knowledge and skill through cooperation from the International Communities.

5:3 Redressing the Rural Urban Imbalances

One of the major causes of Brain Drain in Nigeria is the lack of infrastructures in the rural communities. Only three communities out of the sampled community can boast of a government clinic, library with internet access, schools with computers let alone with internet access, medical facilities and educational facilities. Information and communication facilities all seem to be the exclusive reserve of the urban centers and district and municipal headquarters. Yet, the majority of the people live in rural areas. If the fore-going amenities could be provided in the rural areas, then the rural-urban imbalance which causes out migration would be considerably reduced. In redressing Brain Drain federal government states, communities and stake holders in education have to formulate a model for the implementation of a technological scheme that would put research in technological innovation as part of rural development, in the fore front of any training and development of teachers and educators. That would aid both students and teachers' careers, and also provide the funding and expertise that would allow technical education, human development and poverty alleviation. Any government strategy must also provide for technical development plan, management training, computer technology, knowledge transfer and the technologies that will aid productivity for teachers and educators in these communities.

5:4 Local Strategies, Collaboration, Distance Learning

In developing a strategy to counter the effect of Brain Drain on educational leaning, there is a need to introduce a local strategy that puts collaboration at the centre of educational learning. Increase the use of distance learning and digital technology in local schools. The need to partner with companies that produce technology products to help produce affordable platforms such as computer, internet dongle, simcards and laptops that could be affordable to local school in rural communities. The government strategies must include states, local communities and local schools to develop a tailored scheme for these communities. While technological strategy can be part of a scheme used to limit the impact of Brain Drain, there is a need to review the way educational learning is been delivered and if need be partner developed countries to provide fund and expertise on scheme that could help limit the loss of skilled educators in rural communities. Any strategy should emphasise local control, noting that states should leave the option of planning and consolidation up to local communities. Local communities should be helped to create a centre for technological development in each community and schools should also be given technical help to develop technological curriculum. There should be a technological expert attached to every community to help them develop a plan and course. Schools should be encouraged to have technological classes once a week. The report posits, the government, states, communities and schools should look to distance learning technology and to develop a collaboration of regional technology consortiums or organisations to expand and improve their curriculum. The report also encourages inter-community, school collaboration and sharing of technological

knowledge to reduce costs where possible by sharing certain personnel, student exchange services, and resources with other schools and communities. The government and states should facilitate public private partnerships by providing funds and the technical knowhow for technological programmes, by encouraging tax breaks to participating individuals, companies and organisations. The research recommends a setup planning committee that should look into reviewing all aspects of education at all levels looking at best practise in other part of the world. This committee should include representative from the government, the states, the local communities, schools and stakeholders with legislation backing and financial support. The research also recommends a range of cost-saving and incentive scheme in increasing strategies, aimed at achieving equilibrium and maintaining the quality of education available for teacher, educators, students and the communities at large left behind in these communities. The set-up of a technical committee to look into the need to develop a strategy will help combat or limit the effect of Brain Drain. This will help provide a frame work that can be built upon by successive governments.

5:4 Summary

From the study, the researcher has observed that rural urban migration in rural communities in Nigeria and Calabar in particular have been caused by the lack of planned infrastructural development by the government. Also, many factors were identified as being responsible for rural urban Brain Drain in the study area. The migrants' desire to acquire education, secure better industrial employment, to stay with relatives and help develop the communities, has pushed migrants to the cities.

Some of these migrants however move to urban cities due to the lack of modem technological infrastructure.

Developing a strategy that is anchored in technology could be integrated in any planned programme in limiting migration and the loss of highly skilled professionals. It is important that the lack of this kind of technological infrastructure has meant that skilled educators and teachers alike have no choice than to migrate to areas where this infrastructure is available. The need to address issues relating to connectivity such as the internet that will aid education and deliver application platforms such as computers to support teaching and learning should also be part of any technological infrastructure, when developing an educational strategy.

5:5 Conclusion

In this research a systematic evaluation of the problems of rural-urban and its Socio-economic significance has been critically appraised. It should be noted that lack of employment opportunities and inadequate social amenities in Calabar municipality are the major factors which induce rural out migration. If this should continue unchecked, the rural communities will be depleted of able body and skilled man power that would have helped in sustaining the economic base and this will have a disastrous effect on education and the rural economy.

The majority of schools don't have computers and internet and where available, they are localized in most cases in a single room. Most of Nigerian schools implementing technology systems lack required funds. Expertise to deploy school-wide area networks Internet is not common in Nigerian schools with a need to promote the deployment of these technologies for both local and school networks, as well as for long-haul connectivity solutions especially for rural-based schools. A number of

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*Critical Issue was developed by Jan Gahala, M.A., and technical specialist in NCREL's Communications department. Promoting Technology Use in Schools*http://www.ncrel.org/sdrs/areas/issues/methods/technlgy/te200.htm

Critical Issue: Technology: A Catalyst for Teaching and Learning in the Classroom from http://www.ncrel.org/sdrs/areas/issues/methods/technlgy/te600.htm

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5:7 Research Questionnaire

Dear Respondent,

This questionnaire is aimed at finding information that would help in ascertaining the extent to which technology can be used to limit the effect of Brain Drain on education in rural communities in Nigeria.

Also this research is being conducted as a partial fulfilment of the requirement for the award of Master of Science (M.sc) Degree in learning technology at the National College of Ireland. The information needed is therefore mainly for academic purposes and will be treated in strict confidence and should take 5-10 minutes to complete.

Thank you.

Please answer the following question by ticking the correct answers from the options given for each question.

- ✓ **Tick as appropriate**

1. What is your occupation?

(A) Teaching □ (b) Civil Servant □ (c) Student □

(D) Trader □ (e) Other (specify) □

2. Marital status.

(A) Single □ (b) Married □ (c) Separated □

(D) Co-habiting □

3. Indicate age bracket.

(A) 15-25 □ (b) 26-35 □ (c) 36-45 □

(D) 46-55 □ (e) 56+ □

4. What is your level of Education?

(A) Primary school certificate □ (b) Secondary school certificate □ (c) Diploma □

(d) Higher degree □ (e) Ordinary degree □ (f) Masters □

(g) Doctorate □

5. Do you have any of the following?

(a) Computer □ (b) Laptop □ (c) Internet access □

(d) Mobile phone □

6. Why have you not migrated out of your village?

(a) No education □ (b) No relation in town/ city □

(c) No work for me in the city □ (d) I prefer farm work □

(e) I don't like city life □

(f) Other (specify).....

7. In your opinion who is more likely to migrate?

(a) Male □ (b) Female □

13 How often do you access to the internet for class?

(a) 1-2 hours a day □ (b) 2-3 hours a day □ (c) 1-2 hours a week □ (d) 2-3 hours a week □ (e) Other(specify) .....

14 How reliable is your internet service?

(a) very good □ (b) good □ (c) fair □ (d) poor □ (e) very poor □

15. What types of technology do you think can aid education?

Please specify.....

16. Do you see Brain Drain as a problem to education in your community?

(a) Yes □ (b) No □ (c) Not quite □

17. Can technology reverse the effect of Brain Drain on rural communities?

(a) Yes □ (b) No □.....(c) Not quite □

18. If yes in what way.....

19. Do you think the Government is doing enough to tackle the problem of rural-urban migration?

(a) Yes□. (b) No □ (c) Don't know □

20. What do you think the Government should do to reduce rural-urban Brain Drain?

(Please specify).....

21. Do you think the Government is encouraging the use of technology in schools and colleges?

(a) Yes □ (b) No □ (c) Don't know □

22. How often is technology hardware upgraded in your college?

(a) Regularly □ (b) Not often □ (c) Never □

The rationale behind developing this kind of questionnaire is to gather qualitative and quantitative data that can be used to support the research been undertaking.

While developing this questionnaire I tried to ask the relevant question that could help in eliciting qualitative information. The questions were drafted by taking into cognisant the target group and by making the terminology easy to understand and to answer.

The questionnaire used multiple choices, dichotomous item and numeric item in developing the questionnaire so as to give a more balance approach to the questions asked.

The essence of wording this questionnaire the way it was worded is to provide clarity to the respondent, so as not to bias or skew the respondent answer to the questionnaire. Since the research topic was the impact of rural-urban migration cross river states of Nigeria. The questionnaire was design with the rural communities in mind, the questionnaire asked, where simply and straight forward so as not to cause any ambiguity to the respondent.

Multiple choice question was used in this questionnaire because it give the respondent the choice of answer that are not available with other form of question,

with the rural respondent in mind and the level of literacy also considered I came to a conclusion that the multiple choice format will be the best form of question to design.