

# INDIGENOUS TECHNOLOGY: AN ANCHOR FOR SKILL DEVELOPMENT IN NIGERIA

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## **Abstract**

*Ever before the arrival of the colonial era, in Nigeria, a form of technology had existed in Nigeria which can be referred to as indigenous. Everyone in the system then displayed their own skill which attract necessary development. Therefore, talents, skills, hardwork, patriotism were displayed by every member of the Nigerian society and it came part of them. Therefore, looking at indigenous technology as a bedrock for skill development will give way to value of our own technology which can bring comfort and easiness. This paper, therefore examines the development of various skills that have their foundation built on indigenous technology as well as technological development which brings about material gain and value development training. It concluded by recommending skill development as part of human development even within the educational system. This can also make it a powerful instrument for value promotion in Nigeria.*

**Keywords:** *Indigenous technology, Skill development, Employment generation*

## **Introduction**

Looking at every society, technology either modern or indigenous had existed and becomes a part of man. In every way, technology is very functional in human life. An individual in today's Nigeria to be useful to his or her society must be technology based. He or she has to be equipped with one skill or another and that which can be passed on to the next coming generation. Every sane being should be able to pass across the knowledge of the technology to the upcoming generation and the practice of it in a reasonable way that can develop a person skill wise.

In recent times, there has been a kind of public roar over the issue of developing a skill vis-à-vis entrepreneurial institution. Training and hardwork have paved way to value of money, comfort and easiness. Majority of Nigerians, value preferences are in a state of confusion. The youth in today's context are developing in a world that looks fearful at times. (Mba and Uchendu, 2007).

Supporting this view is Igbo, Okpenga and Ako (2007) who asserted that for any nation to develop meaningfully, her citizens must learn values that are worthwhile. Recently, there has been an uproar of unemployment all over that which has eaten deep into the fabrics of the nation. Skill development has therefore created a way out in order to build an healthy environment and

to keep the nation moving. It is rather unfortunate today that despite the problem of unemployment, the government is not doing much about looking for an alter nature to the problem. Individual on its own trained himself to a skill, build on it and then use it as a means to an end. This he uses to develop as well as promoting himself.

### **The Concept of Technology**

It is the science or knowledge put into practical use to solve problems or invent useful tools. It is an application of a systematic technique, method or approach to give solution to a problem. Technologically is simply the combining of other economic products in new ways. It is the branch of knowledge that has something to do with the creation and the use of the technical means and the relationship they have with life.

According to the Department of Basic Education 2011, p.8, technology has been seen as the use of knowledge, skills, values and resources to meet the need and the want of the people by creating a practical way of solving the problems putting into consideration the social and environmental factors.

On the other hand, indigenous technology could be regarded as a body of knowledge advanced by a culture that provides methods or means to control the environment, extract resources, produce goods and services and improve the quality of life (Cheek, 1992) Obikeze (2011) describes indigenous technology in terms of tangible devices such as fishing nets, knives, machines, bombs electronic devices and so on, as well as infrangible devices such as songs, jokes, ideas, skills, methodologies, organizations and so on. Indigenous technology according to Odora Hoppers (1998) is made up of technologies such as looms, textile, jewellery and brass work manufacture and technological knowledge in agriculture, fishing, forestry, resource exploitation, atmospheric management technologies, knowledge transmission systems, architecture, medicine and pharmacy.

Technology designed, fabricated based on culture tradition and needs of a people, that which is adopted for use in the environment of such people is regarded as indigenous technology. (Manabete, S.S. and Umar, B. 2014). Olaleye (2007) asserted that the transformation of a theoretical idea to a practical skill so as to produce the objects of ones' need is regarded as technology. Oghekhenekhowo and Omoreige (2013) referred to indigenous technology as village technology. A technology that has its root or foundation from the cradle.

Indigenous technology has faced disturbing threats from in and outside Africa. These includes low patronage from the governments and her agencies and other stakeholders. Over reliance on indigenous technology by government and peoples of Africa that which results in its low effect. Other threats include the fear of extinction and exploitation by industrialized nations. Many times, the knowledge and skills acquired from Africa are utilized to produce Africa technologies and sold back to Africans. The government of the West Africa sub-region and developmental agencies as well as non-governmental organization, donour agencies, local leader and private sector need to recognize value, uphold and propagate indigenous technology and its knowledge for the benefit of various communities. It is only when this is done that West Africa and indeed Africa as a whole will be confident enough to talk about invaluable contribution to the global quest for technological development.

For indigenous technology to anchor skill development in Nigeria, there is a prime source of change that is, of innovations and adaptations needed for making methods of production to improve that which is needed to trigger growth and development especially for skill development (Onipede, 2010).

Technology development vis-à-vis indigenous is generally regarded as a catalyst for skill development which also leads to national development. This being that it offers among other things the necessary support for change in all major sectors of economy, most especially in agricultural and industrial sectors. Olaoye (2008) asserted that any technology including indigenous is a means of transformation of a theoretical idea to a practical skill in order to produce object of one's development. This has greatly developed man's skill. One of the major advantages of indigenous technology is that an apprentice is able and very sure of developing a skill with earning an income. People who do not have the resource to go for several years without an income as to do full time formal education still have the chance and even the opportunity to acquire marketable skill. This is very relevant to young people who want to contribute to the material income of their families. Adults can also benefit from such opportunity (Williams, P.J. 2000).

There is no culture without her own technology – and this is for achieving a desired goals. However, other existing technology methods and materials and the knowledge acquired often

lead to better choices and therefore leading to better result (Folayan, 1998). In the last three decades, Nigeria has made giant strides in the design, fabrication, refining and development of indigenous technology particularly in the agricultural sector.

### **The Practice of Indigenous Technology and Skill Development**

The starting point is to see technology in another new dimension in order to include the indigenous perspective. We cannot but define technology from a western point of view just to be seen as a current practice. Technology influences values and practices and as such becomes part of culture (Custer, 1995, Chahine & Kmuthia. 2011). There is a growing awareness that the practice of indigenous technology possesses a significant and enduring value that could assist the world in sustainable development (Adeyeye, 2019, Ugwu & Diowu 2016). Indigenous technology and practices is possessed with an historical root which is deep. Almost every country within the continent of Africa has a country specific indigenous practice systems and belief which is rich, sound and distinct in nature. This systems and beliefs extend beyond national boundaries. Local traditional knowledge, beliefs and protocols have persisted in the governance and education of the members of the community which may be involved in the practice of indigenous technology – that which can be passed from one generation to another. This has been done to solve specific environmental and developmental problems of Africans over a thousand years ago (Mohamedbhai, 2013). From a wide perspective which is historical, civilization itself has a foundation with Africa that which is expressed through the richness of indigenous knowledge systems and practices (Barth, 1966 as cited in Adigbuo, 2017).

Indigenous technology and its practices are greatly been considered for the growth of the world today and an agenda for sustainable development. There is an agitation by the world today to embrace indigenous values and domestication of affairs to meet up with the needs of the local people and given recognition to values vis-à-vis culture and orientations. If our leaders in Nigeria/Africa could provide effort in making sure that indigenous – based technology are established thereby promote broader – based distance learning which will help in the repositioning of the social infrastructural and economical value of its people.

Nigeria will completely be independent and economically stable nation if only they are capable of developing its own independent technological based systems that combine both indigenous and scientific values. Indigenous knowledge has contributed immensely to the development of technology in the world which will depend on the level playing ground given to its custodians and opportunities developed for its exploration (Adigbuo, E.R., 2017). People develop and still have relationship with the rural environment where the practice of indigenous technology can be greatly witnessed. The practice of indigenous technology has moved in a great way to help in the level of empowerment that which increase the economy of both individual and the government. The intensity of indigenous practice fades away with the urban environment due to the influence of hi-tech Corbishley, (1994) asserted that wooden mortars and grinding stones were and are still in use to grind corn, beans, pepper and the like. He further discussed that on November 11, 2003 there was a broadcast news about using of wooden grinding stones by some woman to grind peanut into peanut butter which was sold to shops in order to make money. In Africa today, traditional weapons were found and this suggest to us that indigenous people still rely on indigenous technology for defense and are combined to be with the skill to use it, and proved its effectiveness during the battle (Maurice, Bell & Schafer, 1989). Africans have been empowered today through indigenous technology because many have made their living through it. The rural poor's livelihood rely mostly on particular skills and knowledge necessary for their living. However, in this present world, most of the indigenous knowledge systems are at a verge of becoming extinct due to our national environment which changes at a fast rate and a moving pacing economic, political and changes in our cultural status globally.

Any country's knowledge system basically needs its indigenous knowledge vis-à-vis its technology as her basic ingredient. This makes up the skills, experiences and insight of the people, applied to improve or to maintain their means of living (Ellien and Harris, 1996). An outstanding input to knowledge globally have emanated from indigenous people. Example is in the field of veterinary medicine and human medicine with a close understanding of their environment. Indigenous technology as well as its knowledge has grown and has adapted to continuously change the environment gradually and that which has passed down from generation to generation and has entered into the cultural values of the people at a close range. Ellen and Harris (1996) further discussed that indigenous technology and its knowledge has made up the

social capital of the poor, and has hitherto been an assets for them to fight for their living, to produce food for themselves, to provide shelter, to learn certain skills which will develop them an as well to control their own lives.

Indigenous technology as well as the knowledge has come to form the basic part of the lives of the rural poor. Their survival relies mostly on specific skills which they learnt and knowledge which is very necessary for their livelihood. Also, to help the development process, indigenous technology cum knowledge is very much of relevance for the following sectors and strategies, agriculture, animal husbandry and ethnic veterinary medicine\ . The knowledge of indigenous technology is a valuable and sophisticated knowledge system developed by local communities in different part of the world. This knowledge has been tested at different times in a way that is different to the western empirical system. The knowledge of indigenous technology becomes the basis for self-sufficiency and self determination to survive at least for these two basic reasons. Firstly, the rural poor are used to indigenous technology as well as its practices. They have the understanding of it, handle and maintain the technology. Secondly, indigenous technology gather from the local resources which are local. The people ended up not relying solely on supplies from outside which can end up not been available all the time or scarce and as well as of high price (Journal of Agricultural Research October, 2009). The knowledge and practice of indigenous technology gives room for a strong alternatives to western know-how. It opens extra option to indigenous people and development when projects are being designed. Instead of washing foreign technology as a way of solving their problems, they can choose to use indigenous technology and its practice which are often of low cost than the foreign ones. Local skills and materials which are readily available and which does not require any cost (Journal of Association for Agriculture Research. October, 2009).

Emery (1996) asserted that indigenous technology and its knowledge is developed and kept through traditional education that which provides skills, trade, training and socialization avenues for many youths globally today. There is a growing body of evidence to suggest that successful indigenous practices can contribute effectively to the development agenda (Osugwu & Obi, 2010).

Indigenous knowledge cum technology and education could be of great value in schools system. (Ejide, 2010). This will enable students of all levels gain from being open to indigenous education. It will help reduce discrimination in the classroom and develop the sense of community in a diverse group of students. A better way to do this is to work with community elders. It has greatly empowered people that which has brought much gain to both the individual and the government at large. Of great importance is many of these practices today which are indigenous but have lost their authenticity. The practice is also seen as not too much appropriate or acceptable for a great risk and also, they are not easily used to the environment. (Omachonu, 2009). With much intruding of foreign technology, many of the practices of our local technology vanishes away and with this sudden disappearance is of much relevant to people who are making use of it and even earning their living with the technology. This disappearance is so costly that it may be implicating. Even technologies, artefacts traditional skills, method of solving problems and even expertise are missing (Omachonu, 2009). There is therefore the need for a quick intervention which is compulsory to revertalise deeply and put in place the relevance and the practice of indigenous technology in today's society in order not to bring Africa backward and to the lowest. Bearing in mind that with the practice of indigenous technology, is going to be of great benefit to our coming generation, then the need for its revival.

Indigenous technology and its practices emphasises much on a life that is meaningful looking at it in cultural terms more than materialistic life. The technology has an end result of empowering people with a solid knowledge of work energy work that is of necessity that which initiated a thought of self-respect received from the trust they have with the strength to come to the help of one another (Omotoye, 2003). For indigenous technology to be useful to people today, has become an issue that West Africa basically Africa must delve into. Limited today is the problem facing importation of foreign technology entering into Africa from Asia and Europe. To be noted is the maintenance of spare parts as well as its repair so also is the training. Africa as a continent is full of abundance of indigenous materialism. Harmonization of this could be done to bring about a global standard (Siyanbola and Egbetokun, 2012). The art and knowledge of getting involved in man's knowledge experience and skill is man's achievement in order to see to the need of individual is often referred to as technology. The local knowledge reveals the identity of an individual. Somethings are embedded such as understanding and perception vis-à-

vis the explanation an individual could give towards their living, their belief, their law, and what they accept as moral and immoral. There is conclusions which have their basis on deciding whether indigenous knowledge vis-à-vis the technology would add to giving solutions to problems which are existing and achieving the planned goals. Majorly, a combination is done carefully of indigenous and foreign knowledge which would be most promising putting aside the rate and the level of adoption and adaptation to the clients. Foreign knowledge does not depict modern technology, also in addition is indigenous practices created and applied under similar conditions elsewhere. These methods may likely be accepted faster and applied more successfully. To promote such a transfer, a serious understanding of indigenous knowledge is required.

Looking at the knowledge in the local areas, there are other terms used such as traditional knowledge, indigenous knowledge, local knowledge and even traditional environment knowledge which means the matured traditions which had been existing as well as practices of some local or indigenous communities. Embedded in traditional knowledge are teachings knowledge and wisdom of these communities. Also, are the skills, experiences and insight of the people which are involved and applied to improve or maintain their means of living which include their local technology and its practices. Buseri (2011) asserted that using 'local' as a term of qualify some technology should not give room for the technology to be devalued or relegated which is of great relevance in some developing countries. It rather suggests to us that it is a technology whose application, the existence, the use and indeed the knowledge remains restricted to a particular area place or locality is either in it developmental stage of growth. This is telling us that such technology may not be well known and extensive in term of its use, knowledge and application by consumers of technology. Local technology is this another term used for indigenous technology and this is because of its foundation.

The need for indigenous knowledge regeneration is essential in the making of indigenous technology that which will be useful to the local people. Indigenous knowledge system in Nigeria have impacted as well as given information to the application of education technology in so many ways. An example is the useful information it has always given to farmers concerning their agricultural problems on taking care of their produce and to be free from all forms of



shocks that could result in a serious impact or gradually wipe of farmers' ability from farming (Chawinga and Zozie, 2016).

Consideration is been given to indigenous knowledge vis-à-vis the technology as well as their practices for world growth and sustainable development medium. The world is moving towards accepting indigenous value and domestication of affairs to meet up with the needs of the local people and given cognizance to cultural values and orientations. If leaders both in Africa and Nigeria could promote efforts in making sure of the foundation of indigenous based technologies and foster broader based open distance learning, this aid the repositioning of the socio-infrastructural and economical value of the people. Nigeria will not be seen as a complete independent nation as well as been economically stable until it has the ability of developing its own independent technological based systems that has the combination of indigenous and scientific values. Indigenous knowledge as well as its technology has contributed greatly to the growth of technology globally and this depends on the level playing ground consent to its custodians and open doors given to its explorations.

In small industries, technological skills are available especially within the industries that are known in rural areas and such industries are with limitation known to some particular owners. If people who had these owners around them could have human methods easily received at the beginning and not easily develop in being in the same line with majority of these industries. The growth of skills which are technological, recent development has ended up to be a clear element of the process of transfer. With transfer of technology, skills are better developed. Indigenous technology has some major advantages, one of which is that an apprentice has the potential to grow a skill on which he can rely on for his daily living. Knowing full well that there are those who are not able to go through formal education, but they still have the advantage or chances to be such that such people are still given the opportunity to gain a skill which commands market. Some youth are bread winners in their family and so could benefit from such opportunity. Adults can also gain advantage of such skills of their choice as long as they take full responsibilities of themselves and their family (Williams, 1995).

Scientific knowledge and its application as well as skill which brings about improvement of both physical and natural aspects of life is the backbone of technology Wle (1992) explains

technology to be a knowledge and machinery that can be employed to move forwards an enterprise involving software (skill) and hardware (equipment). In a broad sense we can see technology to involve entrepreneurial expertise and professional skills needed to plan programmes (Sanhkam, 1982). It is essential to take cognizance of the university curriculum in Africa today to add the positive basic elements of indigenous skills and practice. As a practical step which can be immediate, suggestions may include allowing fields of study such as medicine and even other fields should be allowed to undergo some training of like one year in our rural communities under the supervision of their teachers. To study these systems which is indigenous and how they can cooperate and contribute their own quota to solving the problem of the local people. Using our indigenous skills and techniques in a good way in the development of modern science and technology, many things are expected. Different countries in Africa going through their ministries of science and technology international organizations, universities both within and outside Africa Non-governmental Organization, individuals and custodians need to do a research by looking into true documentation first, looking at traditions, the effect on individual given respect to the skills and technique which in today's context can be reached, and how the society being adjusted have change and are still changing these systems and the roles of each tribe looking at maintenance and transformation.

Labe (2008) asserted that in most cases, indigenous technology has created a good life for the villagers looking at their way of living which relies completely on a particular skills and knowledge necessary for their survival. Labe (2008) further opined that bringing to memory that modern technology now spread over the whole world is now necessary. He also says that all the activities noted with human has their foundation in indigenous technology.

### **Challenges facing Indigenous Technology**

Indigenous technology as well as its knowledge is been faced with a lot of challenges especially in Africa that which has caused it to be relegated. Indigenous technology as well as indigenous knowledge can be well understood to be the foundation of the value that Africa as a continent has incurred in individuals through the efforts for freedom and self livelihood (Adigbuo, 2007). Majority of the problems being faced by indigenous technology or knowledge emanates from the long age generation who now finds it not easy to transfer their beliefs and practices to present

day age who are scientifically oriented as well as their education. As soon as these long age generation goes away, these their knowledge, belief and practice fades away with them (Muhamedbhai, 2013).

Another noted source of problem facing indigenous technology and indigenous knowledge as well as its practices keeps on breaking the technology and its practices via the transmission of formal western education.

Moreso, there is a great benefit which indigenous knowledge in Africa can add to world agendas like the UN 2030 Agenda for Sustainable Development (United Nations, 2015). The formal education system has in one way or the other hindered the everyday practical life parts of indigenous knowledge thereby substituting them with abstract knowledge and academic means of learning. In today's context, a deeper risk is noted that majority of indigenous knowledge disappears with its useful knowledge about sustainable means of living (UNESCO as cited in Ugwu & Diowu, 2016 p. 23).

To corroborate this statement above is Sifuna (2008) who asserted that the failure to embed indigenous learning and western education was an intentional act to face away african education. This also relates to indigenous technology and even indigenous knowledge. Another major challenges noted with indigenous knowledge in Africa as highlighted by Eyong (2007) is colonialism. Indigenous technology vis-à-vis indigenous knowledge have suffered from a long period of years from different methods of dissemination within the western control and post-colonial education and western religion, science and technology. Indigenous systems today both the technology and knowledge makes a greater part of selective omission of non-European accomplishment, invention and technologies in academic works. Indigenous knowledge system and the data used are frequently diverted to ascertain the hypotheses of scholars who are not from Africa (Eyong, 2007, p. 131).

The alarming of these challenges heather was the invasion of the Europeans in the context of the growth of indigenous knowledge and its practices in Africa. A noticeable challenge is that the development of indigenous knowledge and even the technology in Africa was set up by non-Africans and not within the circle and shores of Africa for Africans (Adigbuo, 2007) indigenous knowledge in Nigeria and its technology has diminish as it is in other country in the continent of Africa has been based on a condition that there has not been a proper formulation of the

knowledge, documentation and not well preserved. This has been a global challenge of the indigenous cultures that have in every wise preserved cultural knowledge and its practices through the excursion lineage. Other challenges that could be identified is the serious decline and neglect of our indigenous technology vis-à-vis its knowledge. A lot of the technology still remain untapped, unused, poorly managed and even abandoned in this contemporary age and this has been the result of exposure to western culture.

Efforts have been made severally as well as steps taken for a kind of resurgence of the knowledge as well as the technology in the field of design, agriculture, food preparation, environmental conservation, fabrication and the like. The New Economic Partnership for African Development (NEPAD) (as captured in Makinde & Shorunke, 2013) gave cognizance to the truth that Africa is richly blessed with knowledge base and technologies that have even perform a major function in biodiversity conservation, sustainable use and prospecting.

## **Conclusion**

Technology though may be a long age thing as people may thought or imagined, but it has moved round to improve within a very good time. This is so as man has to change his environment seriously and profoundly and as man strives to adapt with changes in his environments and pull his rope for survival in a very unfriendly and new environment. He makes for himself, put on fire, put on cloths, builds aircraft and space vehicles and also construct boats. Man's environment is full of all these and he himself becomes an agent of change. Majority of technological outcome in form of fabrication of metals by the youths in Nigeria particularly in the eastern part who are not opportuned to be trained formally to a western education gave their consent to how important indigenous education is. This knowledge can be harnessed and garnished with the scientific knowledge of today and for advancement technologically.

For the growth of the world and sustainable development agenda, indigenous knowledge vis-à-vis its technology and its practices has become a thing of consideration. Globally, there is a drifting towards accepting indigenous values and thinking of how to meet the needs of the local people and how their cultural values and orientations could be recognized. Indigenous knowledge has brought a great benefit to the growth of technology globally that which depends

on the level of playing ground accorded to its custodians and advantages given to its explorations. So for much development to take place in regard to skill development, indigenous technology and its practices is very paramount and of great value as it will have caught across the boundary of every needed area.

## References

- Adeyeye, B.A. 2019. Africa Indigenous Knowledge and Practices and the 2030 Sustainable development goal: Exploring its uniqueness for quality knowledge sharing. *Journal of Humanities and Education Development (JHED)* 1 (4) 147-152 <https://doi.org/10.22161/ijued.1.4.2>
- Adigbuo, E.R. 2017. African Indigenous Knowledge. The Challenges of Industrialization. *International Knowledge of Humanities*.
- Buseri, J.C. 2010. Local Technology and Education in the New Millennium. In L.O. Ocho (eds) *Reforms in Nigeria Education*, Enugu: New Generation Books pp 267-272.
- Chahine, I. & Kinuthia, W. 2013. Juxtaposing form, function and social symbolism: An ethnomathematical analysis of indigenous technological in the Zulu Culture. *Journal of Mathematics and Culture* 7(1), 1-30.
- Chawinga, W.D. & Zozie, P.A. 2016. Increasing access to higher education through open and distance learning. Empirical findings from Mzuzu University, *Malawi International Review of Research in Open and Distributed Learning* 17 (4), 1-20 <https://www.doi.org/10.19173/irradiv17142409>
- Cheek, D.W. 1992. *Thinking constructively about science, technology and society education*, Albany State University New York, Press.
- Custer, R.L. 1995. Examining the dimension of technology. *International Journal of Technology and Design Education* 5(3) 219-244.
- Corbishley, M. 1994. *What do we know about prehistoric people* New York: Simon & Schuster Young Books.
- Department of Education 2003. *Revised National Curriculum Statement Grade R-9 Technology* Pretoria: Government Printers.
- Emery, A.R. 1997. *Guidelines for Environmental Assessment and Traditional Knowledge. Indigenous Practices and Technologies*.

- Ellien, R. and Harris, H. 1996. Concept of indigenous environmental knowledge in scientific and development studies literature- A critical assessment, draft paper. East-West Environmental Linkages Network Workshop 3 Canterbury.
- Eyong, C.T. 2009. Indigenous knowledge and sustainable development in Africa. A Case Study on Central Africa. *Tribes and Tribals*. Special Volume No. 1, 121-139.
- Folayan, C. O. 1998. Indigenous technological growth. The CADD experience of proceedings of the 5<sup>th</sup> National Engineering Conference of Kaduna Polytechnic Vol. 5, 1-12.
- Labe, B.I., 2008. Exploring local indigenous techniques as a context for basic technology education in Nigeria. *J. Natl. Assoc. Sci., Humanities and Edu. Res.*, 6: 224-232.
- Makinde, O.O. and Shorunke, O.A. 2013. Exploiting the values of indigenous knowledge in attaining sustainable development in Nigeria. The place of the library. Library philosophy and practice e-journal Learning (pp 101-118) Springer <https://doi.org/10.1007/978-3-319-02264-2-8>.
- Manabete, S.S. and Umar, B. 2014. Indigenous Technology for Sustainable Development in Western African. *Journal of Education and Practice* Vol. 5 No 37.
- Igbo, H.; Okpenge, E.O. and Ako, J.A. 2007. In Anyebe M. Conference Proceeding. Book of Reading October, 2011. ASEN Publication.
- Mbah, M,N. and Uchenda, O.G. 2007. Strategies for inculcating value in the youth in Anyebe M. (2011) education, a tool for value promotion in Nigeria. *ASEN Publication* Vol. pp.56-64.
- Mohamedbhai, G. 2013. Indigenous knowledge must be harvested for development. University World News. Retrieved from <https://www.universityWorldNewsComlpestphp? Story = 2013030212115748>
- Obikese, D.S. 2011. Indigenous knowledge systems and the transformation of the academy in Africa. The CULPIP model. Retrieved February 11, 2015 from <https://citeserx.1st.psu.edu/viewdoc/download? doi=10.1.1.164.9357 rep= rep 1 & type = pdf> Accessed 30 Nov., 2013.
- Odora Hoppers, C.A. 2002. Introduction in C.A. Odora Hoppers (Ed) Indigenous knowledge and the integration of knowledge systems (pp VII-XIV) Claremont New African Books.
- Olaoye, A.A. 1992. Indigenous Technology in Nigeria. The chronicle. *Journal of the Students Historical University of Ilorin*, 7, 2-4 Google Scholar.
- Olaleye, S.A. 2007. Africa Indigenous Knowledge Science and the quagmire of Sustainable development. *Journal of Applied Philosophy* 1(1)
- Omachonu, G.S. 2009. Fishing in the Indigenous healing practices among Ilajes of Costal Yorubaland of Nigeria. A Historical Perspective: *European Scientific Journal*. May, 2013 Vol. 14 pp. 165-170.

- Omotoye, O. 2012. Indigenous Technology and Innovation in Nigeria opportunities to SMES. *American Journal of Industrial and Business Management*, Vol. 2, No 2. 2012.
- Omoregie, C. O and. Oghenekhwo, I.E. 2013.Re-engineering appropriate village technology for sustainable development in Africa. *Journal on Education* Vol. 10 pp 20-25.
- Onipede, K.J. 2010. Indigenous Technology and Agricultural Production. The Case of poultry Incubator. *International Journal of Poultry Science*. Vol. 10(6); 493-495.
- Osuagwu, C.O. and Obi, K.U. 2012. *African Journal of Environmental Science and Technology Academic Journals.orgs. AJEST*
- Santikan, M. 1982. Technology transfer. A Case Study – Singapore University Press Singapore (1982).
- Owuor, J.A. 2007. Integrating African indigenous knowledge in Kenya’s formal education system. *The potential for sustainable development Journal of Contemporary issues in Education* 2(2) 21-37.
- Siyanbola, W. O., and Egbetokun, A. A. 2012. Indigenous Technologies and innovation in Nigeria opportunities for SMES Retrieved. Dec. 28, 2011 revised Feb. 6, 2012.
- Ugwu, A. N. and Diowu, C.I. 2016. Integration of Indigenous Knowledge and Practices into Chemistry Teaching and Student Academics Achievement. *International Journal of Academic Research and Reflection* 4 (4) 22-30.
- Wie, T.K. 1992. Technology from Japan to Indonesia. Proceedings of the Conference on Transfer of Science and Technology in Kyoto Japan (1992).
- Sifuna, D.N. 2008. The case of primary education in Africa from colonialism to globalization. *African Traditional Herbal Research Clinic* 10(3) 20-33.
- Williams, P.J. 2000. The only methodology of Technology? *Journal of Technology Education*, 11(2), 48-60.