

## Using Transdisciplinarity of Indigenous Knowledge Systems in Food Security Research

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**ABSTRACT** The National Development Plan (NDP) of South Africa identified specific real life problems. These problems are characterized by complexity and require a transdisciplinary approach with participation of all key stakeholders involved, including local communities. The article is based on cases from Mtunzini, KwaZulu-Natal and the researcher's experience from a four months' Indigenous Knowledge Systems (IKS) workshop on IKS epistemologies and research methodologies. It illustrates the importance of integrating different knowledge systems including indigenous knowledge in solving complex social problems. The researcher used a mixed research method approach and an Afrocentric approach to interrogate the way community members dealt with natural hazards, which cause food insecurity.

### INTRODUCTION

South Africa has a multiracial and multiethnic population with Black Africans making up about seventy seven percent of the population, which is estimated at 44.3 million. The main Black ethnic groups are the Zulu, Xhosa, North Sotho, Tswana, South Sotho, Tsonga, Venda and Ndebele. More than half of the Black people live in urban areas, mostly in low-income townships and rapidly growing informal settlements. The rest of the Black people, numbering about 18 million, live in rural communities in the former Bantustans (United Nations Environmental Program 2008).

Based on this information, it is clear that the vast majority of people in South Africa live in low-income townships, in rapidly growing informal settlements or in rural communities. This situation presents the government with challenges of how to deal with complex problems such as poverty, health matters, disability and many other social ills. Peoples' problems have resulted in protests, demanding service delivery from municipalities and the government. Few examples of social problems involve looting of goods from other peoples' tuck shops, burning down of infrastructure like schools, and a big demand for Reconstruction and Development Program (RDP) houses, drug and alcohol abuse, poverty, and violence. For example, community members' expression of dissatisfaction with government's poor service delivery was shown in communities such as Malamulele in the Limpopo

Province (South Africa). People in this local community want to have their own local municipality and have resorted to violence. Learners boycotted classes.

The National Development Plan (NDP) in South Africa has identified specific real life problems such as job creation, poverty eradication, poor education, uneven access to healthcare and infrastructure, minimal participation and social cohesion. It is realized that Eurocentric epistemologies and research methodologies including their value systems, are failing to mitigate the developmental challenges identified in the NDP. This paper aims to raise awareness, stimulate new thoughts and generate discussions on wealth of using transdisciplinarity of indigenous knowledge systems in solving real life problems. South African researchers are faced with challenges of creating social justice, with regards to making research relevant to the needs of the poor and all people involved.

On the basis of the above, there is an increasing recognition for the urgency to promote indigenous ways of knowing and knowledge production among researchers, students, policymakers and development agencies (United Nations Environmental Program 2008), based on value systems of the African people themselves. These indigenous ways of knowing (epistemologies) and knowledge production (research) should constitute the basis of sustainable development and community livelihood, and assist Africa to contribute to the global pool of knowledge on its own terms rather than those

dictated and dominated by others. African researchers need to persist in developing and using alternative methods for studying the realities and refrain from holding on to the research pathways mapped out by Western methodologies, within which many have been trained.

This paper does not seek to negate Western methods of investigation but intends to challenge researchers and African scholars in particular, to use alternative methods of inquiry as far as the investigation and preservation of indigenous knowledge is concerned, for the development and empowerment of African people. The challenge is how to promote these indigenous knowledge systems (IKS), which have been marginalized for centuries, in order to move research and scholarship in the interest of African local communities in a globalized knowledge economy. This paper argues that research conducted must not only benefit the researcher, but also needs to empower the researched, hence it suggests a transdisciplinary approach that takes into consideration the diversity of African cultures and their value systems.

Almost all knowledge has cultural relevance and must be examined for its particular focus. From this perspective, it is dangerous, if not oppressive, to take any one method of investigation as universal. It is clear that knowledge cannot be separated from people's history, cultural context and worldview. According to Asante (1987), the concepts and methods within Western thought are inadequate to explain all the ways of knowing because 'universality can only be dreamed about when one has "slept" on truth, based on specific cultural experiences' (Asante 1987: 168). Therefore, he argues that all cultures and the indigenous ways of knowing arising from such cultures are to be respected and valued for their uniqueness. In this paper, the researcher argues that Western methods of knowledge can be used in partnership with indigenous ways of knowing to solve food security problems and any other problems as identified in the National Development Plan (NDP), South Africa. Currently, almost all knowledge and knowledge production is still dominated by Western knowledge systems, in universities, in schools and elsewhere, therefore there is a need to find ways of integrating IKS into the curriculum, government sectors, policymaking and in all spheres or sectors of life, where possible.

A quick review of the literature reveals that Africa has historically made a host of contributions to world civilization (Asante 1990; Derri-court 2011), which remain unknown and perpetuate the myth that indigenous and traditional African societies are incapable of rigorous scientific inquiry. It must be understood that indigenous knowledge develops in local contexts to solve local problems, therefore 'modern science is more acceptable to the indigenous communities, if it is integrated with what they already know' (United Nations Environmental Program 2008: 26). This research report found that one of the main challenges is to popularize indigenous knowledge so that it can be used as a tool for solving local problems as identified in NDP and globally. The disregard of indigenous knowledge can have negative effects on the environment and health of indigenous people, because this may imply that indigenous people are not recognized as the living species. On the other hand, the use and application of appropriate IKS can promote environmental conservation, positive attitudes towards the disabled community and healthy living. In the past, IKS has enabled indigenous people to survive climate hazards and health problems with little or no help or support from the outside world.

### **Characteristics of Indigenous Knowledge**

Broadly understood, indigenous knowledge (IK) refers to knowledge, skills, innovations, experiences and beliefs of people in their respective communities accumulated over years and used to maintain or improve livelihood. IK is the foundation for local community decision-making in agriculture, health, natural resource management, conflict transformation, governance and leadership, food security and other activities for community livelihood. IK is dynamic and transdisciplinary, as new knowledge is continuously added through social practice and interaction from within and outside the local community. This enables people to innovate from within and adopt external knowledge and experiences to suit local situations.

Indigenous knowledge is experiential knowledge based on a worldview and a culture that is basically relational. The spirit of the African worldview includes wholeness, community and harmony, which are deeply embedded in cultural values. A person becomes human only in the midst of others and seeks both individual and collective harmony as the primary task in the

process of becoming a true person (Sarpong 1991, 2002). African knowledge and its method of acquisition, has a practical, collective and social or interpersonal slant. Nsamenang (2006) and Mpofu (2006) show that indigenous conceptions of intelligence emphasize the practical, interpersonal and social domains of functioning and are quite differentiated from the cognitive 'academic' intelligence that dominates Western concepts of constructs.

As a knowledge system, IK is oral and passed from generation to generation in the context of community living and activities (Sarpong 1991; Mkabela 2005). Considering that culture is the 'lens' through which a person perceives, interprets and makes sense of his or her reality, if one speaks of the inclusion of African indigenous knowledge in any investigation, one would be speaking about the examination of African reality from the perspective of an African. However, oral tradition is often, although erroneous, looked down upon, relative to the written tradition. This is partly because indigenous knowledge is mainly oral and partly because it is people-centered and sometimes not easily 'measurable' (Emeagwali 2003). It has been mistaken by many people as simplistic and not amenable to systematic scientific investigation. However, its rich complexities are found in the community ceremonies and rituals, such as, storytelling, proverbs, folktales, recitation, demonstration, sport, epic, poetry, reasoning, riddles, praise, songs, music, and other education-centered activities (Ngara 2007).

Moreover, it is important to say that African indigenous knowledge is not without limitations. Some of them are the continuity of practices and beliefs that lack openness and flexibility to necessary or constructive changes. There is a tendency to forget that just as any other type of knowledge, it is subject to change from economic, environmental and social forces (Sarpong 2002; Mpofu 2006; Nsameng 2006; Zulu 2006). It is from this perspective that the researcher claims that African knowledge and methods of knowing must drive African research to solve people's problems and that IK must be used collaboratively with Western ways of knowing.

### **Institutionalizing IKS**

Universities in Africa are important sites for contestation of any type of knowing for the advancement of IKS and transdisciplinarity, in various ways related to different functions of the

university. Firstly, the university has a *pedagogical role*, shaping young people at a crucial stage of their lives. They have to be guided to think critically and to reexamine existing practices in relation to the value of any type of knowledge including IKS in the society. Secondly, the university has an important role in *generating new knowledge*, and all type of new knowledge generated need to include both Western and indigenous knowledge. This in turn has an influence on government policies at various levels, university's administration, planning, resources and support. Thirdly, the university is *situated in society* and should therefore engage with communities and society in meaningful ways. The university in the 21<sup>st</sup> century should 'prepare persons that can be placed between, across, and beyond their discipline, their culture, their nation, their politics, and their religion' (Adame 2011).

Universities in Africa are the obvious institutions to undertake the important task of integrating IKS with Western ways of knowing. However, African universities have a poor record of achievements in IKS research, innovation and community engagement. Gibbons et al. (1994) suggest what they call a passage from *university* knowledge to *pluriversity* knowledge. The *university* knowledge is the scientific knowledge produced in the universities while *pluriversity* knowledge is a contextualized knowledge in so far as the organizing principle of its construction and its application (Apple et al. 2010). Some work on IKS, for example on traditional healers and the use of medicinal plants, has been carried out in African universities, but it seems disparate. For IKS to be truly effective, a holistic, multidisciplinary and transdisciplinary approach should be adopted.

IKS should be embedded in all university teaching, research and outreach activities. This could be achieved by creating an institutional center dedicated to IKS. The University of Botswana created a Centre for Scientific Research, Indigenous Knowledge and Innovation, which attempts to link scientific research with IKS. It has undertaken several surveys documenting IKS in the country and promoting IKS among communities. The University of North West launched new accredited undergraduate and postgraduate degree programs in IKS. The universities of Limpopo, North West and Venda in South Africa have also partnered to set up a

Centre of Excellence in Indigenous Knowledge Studies. University of KwaZulu-Natal (UKZN) has opened an IKS division at its Westville Campus, where IKS matters are handled. There are other centers devoted to IKS in some other universities in Africa as well.

Another model for institutionalizing IKS is by creating a national center. The center for indigenous knowledge system in Ghana is an independent, non-profit organization, its mission being to examine, preserve, adapt and use the local knowledge of various communities in Ghana and the West African Region. The Ugandan National Council for Science and Technology initiated the idea of putting in place a coordinating unit that would ensure the integration of IK into the school curricula at all levels to jump-start national development. In Nigeria, there is what is known as village chemist in the Faculty of Pharmacy of the Obafemi Awolowo University-Ile-Ife, where traditional medicine approaches are now given some attention (Kalowole 2011).

All the types of knowledge can be incorporated into the main stream. The starting point should be indigenous local institutions in the society and the community at large, because the schools, the government departments and universities are found in that particular society and they are there to serve the society. The policy-makers and schools must be informed by the needs of the society, the universities and researchers must incorporate IK and indigenous people from the society to solve the problems of that community.

### Transdisciplinarity

According to McGregor (2004), transdisciplinarity refers to that 'which is across the disciplines, between the disciplines, and beyond and outside all the disciplines'. The objective of transdisciplinarity research is to understand the present world, in all its complexities, instead of focusing on one part of it (Nicolescu 1997). Transdisciplinarity research is conceptualized, as both, a specific kind of interdisciplinary research involving scientific and non-scientific sources or practices, and a new form of learning and problem-solving involving cooperation among different parts of the society, including the academia, in order to meet the complex challenges of the society. Through mutual learning, the knowledge of all participants is enhanced

and this new learning is used to collectively devise solutions to intricate societal problems that are interwoven (Regeer 2000). Out of the dialogue between academia and all other parts of the society, new results and new interactions are produced, offering a new vision of nature and reality (Négre 1999).

Nicolescu (1997) identifies four pillars that underpin the new knowledge formed. These are learning to know, to do, to be with, and to be. The transdisciplinary approach defines these pillars as follows.

- ♦ *Learning to know*: Refers to training in permanent questioning of assumptions and in building bridges leading to continually connected beings.
- ♦ *Learning to do*: Refers to acquiring a profession, but doing so within a profession that authentically weaves together several competencies at the same time as creating a flexible, inner, personal core.
- ♦ *Learning to be with others*: Means that not only does one learn to respect others, but also learn a new attitude that permits one to defend one's own convictions. This new attitude makes a space for both, open unity and complex plurality, and they are not in opposition to one another.
- ♦ *Learning to be*: Means discovering how one has been conditioned, determining if there is any tension between the inner self and the social life and testing the foundations of one's convictions and to question (McGregor 2004).

The disciplinary knowledge is essential, and uniting different types of knowledge will create a new intellectual space. La Tanzi (1998) proposes that disciplinary knowledge is intellectual inner space and transdisciplinary knowledge is intellectual outer space.

### Transdisciplinarity in Practice

If researchers want to begin to bring transdisciplinarity into practice, they need to start to embrace an exciting, deep mind shift so that they:

- ♦ Accept that the ultimate intent is to *understand the world as a complex whole*.
- ♦ Create space for persons to *reach their potential and find their hidden possibilities* so they can work in dialogue to understand the world as a complex whole.

- ♦ *Dig deeper through dialogue and perspective sharing* rather than stop at the first satisfactory explanation of a problem, and acknowledging that the *space between disciplines is full and fertile* rather than stagnant and empty.
- ♦ Need to work collaboratively to *unite the knowledge* gained from interacting in the fertile margins.
- ♦ Work to form a *new intellectual space* in which resides a gradual cross-fertilization of ideas, while still respecting disciplinary work and search for *fruitful alternatives*.
- ♦ Acknowledge that simplifying reality to simplify work is irresponsible behavior. They need to *embrace the complexity of life* and put in place permanent, complex structures and processes to work in intellectual outer space (Nicolescu 1997) for some ideas of what this would look like in academia.
- ♦ Establish studios or workshops (*ateliers*) of *transdisciplinary research* (free of ideological, political, or religious control) comprising researchers from all disciplines and people from the arts, music, theater, poets, writers, and dancers, and build *centers of transdisciplinary orientation* far above and beyond this short article, thus establish a *virtual creative commons* wherein one can begin to shape outer space knowledge (McGregor 2004).

### Food Security Research

Most people in South Africa live either in low-income townships and rapidly growing informal settlements or in rural communities. They are exposed to food insecurity and are the hardest hit by poverty. Food insecurity is an urgent public health issue because of the high rate of poverty, the effects of global climate change and environmental pollution. The future of food security in South Africa is threatened by natural hazards such as floods, water scarcity, climate change, disease and drought. With food security issues and the development of small business in South Africa, one would expect the agriculture sector to be going from strength to strength. This sector is plagued by a number of issues such as water and climate change, and the others might soon start to feel the effects (United Nations Environmental Program 2008).

According to Sillitoe et al. (2009), only three percent of South Africa's land is fertile and only twelve percent is suitable for production of rain-fed crops. Challenges like climate change and water scarcity are forcing farmers to use the land wisely. Therefore, people living in these areas need to be equipped with ways of alleviating poverty, whether indigenous or non-indigenous. Statistics from the Department of Agriculture, Forestry and Fisheries show there were 120,000 commercial farms in the 1950s, and there are now 36,000. Yet the sector remains important not only for food, but also for providing jobs to farm workers and small-scale farmers.

Research has shown that most people in South Africa are unemployed. Therefore, African indigenous knowledge can be used to eradicate poverty, through the practices that were used in olden days. It is clear that Western knowledge alone fails to reduce poverty and health challenges, and therefore the researchers claim that it is essential to use the transdisciplinarity of Indigenous Knowledge Systems in order to solve problems. The UNEP (2008) report shows that IKS can promote poverty alleviation through traditional food production and preservation, healthcare through traditional medicine practices and suitable methods of dealing with disabilities, and the use of knowledge from elders on how to predict weather hazards like floods. What emerged from this study is that certain indigenous knowledge technologies, know-how and practices, if popularized and integrated with modern knowledge systems, can help alleviate poverty and social ills.

Different corrective indigenous measures or indigenous technologies for environmental conservation were used and can still be used. These include mixed cropping and intercropping, use of grass strips, selective cultivation, grazing rotation, forests protected as shrines to be used for worship and other rituals, and food preservation such as drying of food (fruits and vegetables), which can be stored for later use.

### METHODOLOGY

In an effort to substantiate the arguments above, this study was conducted to find out how indigenous people survived poverty and the natural hazards such as drought, rainfall, health and disability. The researcher visited two elders in their rural home at Mtunzini. They are

the only people who could help with this information and they also knew her parents well, therefore it was easy to find out how they dealt with these complex problems. The information was given to the researcher because they knew the researcher's parents. This is more to do with issues of trust, as elderly people do not always give information to strangers. Another aspect was the aspect of acknowledging them for giving the researcher information. There was knowledge sharing, and the researcher gave them an incentive (in the form of money) so that they could buy sugar, tea and bread, as a way of showing appreciation and respect.

One of the questions investigated was how community members managed to overcome poverty and natural hazards such as drought, climate change, health hazards and disability issues. The most common methods used were storytelling, interactive discussions, meetings and cultural mappings. Cultural mappings were used to identify actual points wherein various people with information were found. For example, they showed the researcher where an elder who knew how to predict weather, was found and also where certain cultural events took place. The researcher used the relational method, which depended on relations. They told many stories, and in the process, both were learning. There was exchange of knowledge, and the researcher told them how it is done nowadays. The researchers worked as a collective and operated at the same level. Incentives in the form of gifts such as money for buying sugar, bread and sometimes small groceries, were provided in order to create a good rapport.

The information received from the community members was supplemented by the researcher's own understanding of the transdisciplinary approach, deeply informed by her participation in a four months IKS training and workshop (from July 2014 to October 2014), which aimed at teaching the participants indigenous ways of knowing and methodologies. It was organized by UKZN (Westville) funded by the Moses Kotane Institute in conjunction with the Department of Science and Technology (DST), National Research Foundation (NRF) Centre in Indigenous Knowledge Systems. The workshop was informed by the South African National Development Plan (NDP) vision 2030, which identifies the specific real life problems facing the majority of South Africans. The problems identified in

NDP, amongst others, are poverty, food insecurity, and job creation, uneven access to healthcare, infrastructure, and poor education. The workshop informed the participants about other ways of knowing such as indigenous knowledge systems epistemologies and research methodologies.

Another intention of this training project, though implicit, was to celebrate the connection with each other and the earth. This was a different project from any other training, workshop or conference the researcher has ever attended. This training project was totally transdisciplinary, even though this word was never used. The attendees were from different walks of life, academics and subject advisors from different disciplines, high schools, postgraduate students, writers, artists, actors, journalists, indigenous people such as traditional healers (*izangoma* and *izinyanga*) and spiritual healers (*abathandazi*), business people and activists. It was transdisciplinary because all eagerly jumped off the disciplinary or occupational bridges onto the fertile ground between disciplines and danced a most awesome dance for four months. The researcher looked at societal problems from different perspectives, which was a learning curve for all of them.

The researcher will use another principle from quantum physics where the fuzzy balls collide on the fluxing field, they move faster when exposed to one another than when they were alone. There were many fuzzy edged balls of knowledge and ways of knowing brought to this training project. When all of these people and their knowledge collided on the fluxing fertile field, the sacred space, fusion occurred and new outer space knowledge was created. This fusion occurred because when the separate bits of knowledge and the people who carried those came together to dance, they move faster when they were exposed to each other than when they were alone. It was totally amazing, it was palatable, as one could reach out and 'feel it'. After the training, the researcher went back to work immersed in these experiences for days. The training and knowledge gained enveloped the researcher and held him/her attached to all of those people the researcher met and all that they shared and created. The researcher was happy for days afterwards, at peace with self yet very intellectually stimulated (you are reading the results of this energy). The researcher went away

with a whole lexicon of new concepts, patterns, experiences that they worked on together and that they are prepared to take back the contributions to getting to know the world better, a hallmark of transdisciplinarity.

## RESULTS AND DISCUSSION

The findings present the following aspects for discussion, namely, food security, climate change, Afrocentricity and indigenous knowledge research model.

### Food Security

Food security was assured by using different technologies such as land management, preservation, sharing and storage of food produced. Knowledge of drought-tolerant and early maturity crops was critical, using such knowledge enabled farmers to make a living even in harsh environments. The cultivation of drought resistant crops such as cowpeas, sorghum, groundnuts and sweet potatoes was crucial. Other methods such as mixed cropping, valley farming and livestock diversification were used to ensure food security. There are unique food security considerations for indigenous people related to the harvesting, sharing and consumption of traditional food, which impacts four pillars of food security. These are access, availability, supply and utilization. They also considered hunting and different fishing methods to sustain communities.

People also used traditional cooperatives, stokvels or clubs, where they gather in groups and try to help one another. This practice still happens today where, for example, a group of people will plough and plant crops as a group or a family, and when they have finished, they proceed to the next family or group (*ilima*). They also put aside money as a group that can be used when it is needed by the group, such as for burials and school fees (stokvels). These practices have helped people survive poverty. On the other hand, there were also illegal practices such as *omashonisa*, who used to trade with money illegally by charging very high interest rates.

### Heavy Rainfall and Climate Change

There were elders who dealt with rainfall prediction, and they used the heights of the nests of the *mahlokholoko* bird on trees to predict

floods, if the nest was too low, floods were unlikely, if the nests were high up, the floods were possible, and they would take precautions. They also used the cry of certain birds to predict rain and the yield of certain wild fruits to predict famine. The behavior of some domestic animals, like a certain type of hare, would run away from home if a disaster like lightning would strike that home. The use of sticks called *abafana* (a certain type of stick taken out of the household) to prevent lightning. They also used the wind direction to predict the weather patterns.

### Health and Disability

Health was to do with how well one interacts with the society, family members, the living and the dead. Health was fundamentally concerned with what it means to be human, to dwell in this world, to be conceived, created, become conscious, survive, become humanized and socialized in and through human, social relationships, to be cared for and to care for others, to die, to be part of a family, community and a wider environment of nature, plants, animals, earth, sky, sea, sun and ultimate reality (Edwards et al. 2004). This is evident in the Zulu tradition of greeting of *sawubona* meaning *siyanibona*, that is, "we are seeing you we are acknowledging your presence." Another greeting is *Ninjani?* or "*How are you?*" The response will be *siphilile* or "*we are well and healthy*". The emphasis of being healthy is on a collective or group rather than an individual matter. Health also implies everyday helping relationships whereby one can help one another using the spirit of Ubuntu. From a Zulu tradition, being healthy and alive implies healthy relationships with the source of being, God (*umvelinqangi*) and ancestors (*amadlozi*), with other people (*ubuntu*) and the natural world (*umhlaba*). There were issues of spirituality that would determine whether one's health is good. Disability was looked at as a way of punishment from ancestors because one did not do things correctly. This involved albinism, being deaf and loss of sight. Traditional healers (*izangoma* and *izinyanga*) and spiritual healers (*abathandazi*) would help the community members on health issues.

### Afrocentricity

Afrocentricity is an alternative way of knowing about the world. It is the vehicle, by which

the 'self' knows itself as not enslaved, but free, not repulsive but desirable, not helpless but licensed and powerful, not history-less but historical, not damned but innocent, and not a blind accident of evolution, but a progressive fulfillment of destiny' (Morrison 1992). Afrocentricity, in this context, is to realize that there exists an emotional, cultural, intellectual and psychological connection between all Africans, wherever they may be (Dei 1994). Afrocentricity is a paradigm that has its core on the understanding of the African identity as rooted, centered and located in the African culture in all aspects, that is, spiritual, social, political and economic. It is the examination of the African reality from the perspective of the African, one that places the African experience at the core, recognizes the African voice and reaffirms the centrality of cultural experiences as the place to begin to create a dynamic multicultural approach to research (Mkabela 2005).

The fundamental aim of Afrocentricity is that all cultural centers must be respected and not impaired by color or geography, instead, to be 'centered' is to be located as an *agent* not as 'the *other*' the basis of which is equal and respectful mutual exchange and synthesis of information. Afrocentricity encourages cultural and social immersion as opposed to scientific distance in research as well as the use of tools and methods indigenous to the people being studied. In this way, indigenous people are active participants in the articulation of views, wishes, concerns and research questions that they deem important to their cultural context and experience. Social immersion would provide researcher knowledge about and familiarity with the history, language, philosophy, and myths of the people under study and reduce misinterpretation, perpetuation of myths and researcher imposition.

The Afrocentric paradigm does not only advocate cultural immersion, indigenization of tools and methods of investigation that African people can use to make sense of their own realities but also the interpretation of research data from an indigenous African perspective. Succinctly put:

*This means that the researcher should understand that what she/he does and how he/she does it is specific to the culture (a situated response), the problem, and the dynamics of the particular context. To achieve the under-*

*standing of this cultural framework requires indigenous African people's involvement and control of research* (Mkabela 2005).

Afrocentricity respects the elderly people for their wisdom, knowledge of community affairs and 'closeness' to the ancestors. Many African people believed that old age comes with wisdom and an understanding of the world. It was the duty of the aged to instruct the youth in a socially responsible manner and the duty of the youth to respect the knowledge of the elders (Dei 1994). As African elders theorized and taught oral literature that included fables, folktales, legends, myths, proverbs and storytelling, African youth received their socialization and education. The task of Afrocentricity is to reclaim and recreate indigenous values where necessary in order to address the needs and aspirations of all African people.

### **Indigenous Knowledge Research Model**

Indigenous knowledge research can help include indigenous people in finding the solutions to the problems that directly affect the people in a community. A major role for indigenous knowledge work is the facilitation of meaningful communication between development staff and local people, informing outsiders about local knowledge and insiders about what scientific technology offers, so that both can better understand the alternatives and realize their comparative advantages (Sillitoe et al. 2009). The cyclic nature of indigenous knowledge research aims to facilitate communication around the circle and emphasizes that all have something to learn from each other.

### **CONCLUSION**

In conclusion, the researcher acknowledges that indigenous knowledge alone may not be enough to help local people in certain circumstances, particularly when rapid changes occur. Examples of these rapid changes are population growth making current agricultural or fishing practices inadequate, or when natural disaster strikes such as *tsunami*, heavy rainfall and drought, that continue to impact domestic and agricultural water supplies and cultivation. The joint venture of different types of knowledge whether Western, Eastern or African must come together to solve community problems.

Although IKS is seen as a way of knowing that can include the indigenous people in the research, IKS in Africa faces several threats as follows.

Firstly, indigenous knowledge is always passed by word of mouth from one generation to another. Many bearers of indigenous knowledge are the elders from the older generation, who now find it difficult to communicate their beliefs and practices to the scientifically educated younger generations. Once the older generation passes on, the knowledge disappears with them. Secondly, there is real danger that IKS in Africa is being wiped out as a result of the rapid changes occurring from imported economic, cultural and political development models through globalization. Thirdly, there is still reticence in the use of IKS in Africa, which is considered anecdotal and not scientific, in the developmental process. It is therefore, important that without delay, IKS in Africa be protected, documented, studied, modified if necessary and then widely disseminated to promote development.

Science has become a dominant global knowledge system and has been accused of intolerance towards other persuasions. If a conclusion cannot be supported by empirical evidence, the practice is not evidence based, or if there is an ability to replicate results, then validity is in doubt. Systems of knowledge that do not subscribe to scientific principles are afforded lesser status, and if given any recognition at all, run the risk of being rationalized according to scientific principles. Much of the debate is between science and indigenous knowledge and takes three distinct forms, that is, opposition to the promotion of science as the only valid body of knowledge, the rejection of science in favor of the indigenous knowledge, and the misinterpretation of knowledge by the use of system bound criteria.

Indigenous mistrust of science on the one hand and scientific disregard for indigenous knowledge on the other, have in common a tendency to evaluate each other according to limited criteria. Science is one body of knowledge, faith is another, and indigenous knowledge is yet another. Therefore, it is important that the tools of one are not used to analyze the tools of another. The indigenous researchers need to use the interface between science and indigenous knowledge as a source of inventiveness. They have access to both systems and use the in-

sights and methods of one to enhance the other. In this approach, the focus shifts from proving the superiority of one system over another to identifying opportunities for combining both.

## RECOMMENDATIONS

In order to achieve a genuine social transformation, the university should stand for, not against, what society demands. For this, the researcher asserts that for the university to become a multidimensional community, it requires a profound transformation towards transdisciplinarity, involving the contextualization of knowledge. This paper is primarily calling for the inclusion of all types of knowledge, infused together, for solving local problems and the acknowledgement of African indigenous voices.

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