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Rural Science Parks: Lessons learned about language and culture impacts

Plenary Session 3:
Innovation and business country culture in relation to the development and success of STPs

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RURAL SCIENCE PARKS: LESSONS LEARNED ABOUT LANGUAGE AND CULTURE IMPACTS

In this study, lessons learned with respect to the impact of language and culture in South Africa's rural science and technology mini-parks (STPs) are highlighted. The main objective is to sensitize policy developers as well as implementers about language and culture contributions towards the delay that is observed in the process of bridging the digital divide. This divide continues to exist mainly between the urban and rural dwellers in South Africa, despite the attempts by government and other agencies to deal with it. Lessons from cases studied by the author elucidate some of the insights and key issues as revealed by various stakeholders and other research participants. Experiments, observations and interviews were used during the data collection process. Furthermore, based on these findings, in this paper the author suggests some pertinent access and sustainability opportunities which exist when technological innovations are considered within the context of language, culture and other forms of indigenous knowledge systems (IKSs). Finally, the discussion is structured in such a way that these lessons could be used in analyzing the situation with regard to STPs in other parts of the world as well.

Keywords: Language, culture, STPs, technological innovations

Introduction

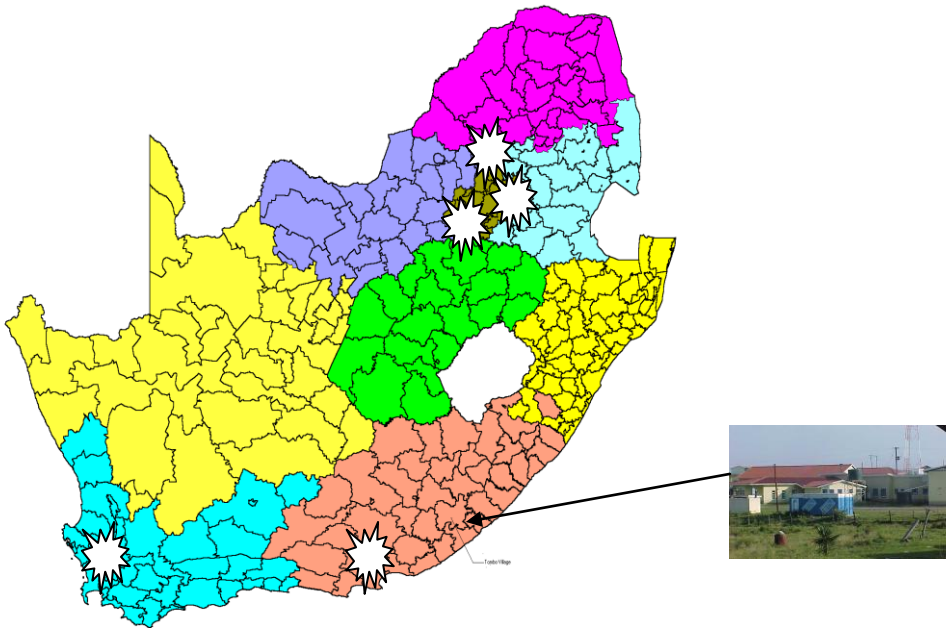


Figure 1, A map of South Africa showing the relative location (indicated with stars) of the STPs and the area (indicated with an arrow) studied

In South Africa , by the year 2005, there were about 5 major-STPs, all of which situated in the most urban areas of the country. Three were in the Gauteng Province (Pretoria and Johannesburg areas) and one in the Western Cape Province and another one soon going to be in the most urban city of the Eastern Cape Province (ECP). The reason for this study to be seen to be important is that although South Africa has relatively developed urban areas, the majority of the people still live in the poor and highly underdeveloped areas. In the 1999 research report on Living Standards in the ECP in South Africa, it is reported that the new democratic government counted people in 1996 and the results reflected that the ECP was the third highest populated province in the country. The report further states that the ECP had 6,3 million inhabitants in 1996, that of these only 2,3 million (37%) of the people lived in the urban areas and that its unemployment rate was the highest in South Africa (Sopazi & Andrew, 2006a).

The establishment of STPs in the urban areas therefore, was seen as a potential contributor to continuation of the digital divide. The main goal of the research was to establish critical success factors for a sustainable STP if it were to be established in a rural area, considering the socioeconomic and technological challenges in an Eastern Cape rural community. This was done by evaluating the present situation of all the relevant stakeholders identified in the stakeholder analysis exercise. The context of the research was predominantly South African and the case study on the evaluation of an existing mini-STP was based mainly on a rural area within the Eastern Cape. It was intended that the information that would be gathered in this study would be used to analyse similar situations elsewhere in the country and indeed in the world . The author here has conducted an in-depth investigation on a particular case in order to yield insights into the realities of the rural mini-STP. If the case that was studied in detail proves to be

representative of other STPs, then it is hoped that one can learn a great deal about general operating principles from this single example. It is for this reason that a case study approach was used.
The situation in South Africa is covered through the following guidelines:

- The role of South African Government.
- Pointers from literature about the current experience and lessons in South Africa.
- What can be done?
- Development as a purpose for providing mini-STPs in rural communities.
- Implications of technological factors on rural STPs
- Impact of physical factors in rural communities
- Implications of sociological and cultural factors in rural STPs
- The implications of political factors on STPs

Pertinent Contextual Definitions

The following definitions are based on the context of this article and have been been coined by the author with the purpose of achieving the objectives of this discourse.

Mini-STP- this refers to technology parks or centres that have been established with the aim of stimulating and fostering innovation capability among the previously marginalized and rural communities at a relatively smaller scale compared to Hi-tech technology parks in more developed areas. These would normally be focussed on ICTs and other related technologies.

Major-STP- this refers to Hi-tech Parks or centres that have been established with the aim of stimulating and fostering research and development as well as technological innovation providing incubation opportunities among established and emerging entrepreneurs at a larger scale and mostly located near established research institutions and firms. These would normally be focussed on Hi-tech industries as well as Information Technology (IT) companies.

STP- refers to either major-STPs or mini-STPs or both, depending on the context in which the term has been used.

Language - this refers to a tool that, though insufficient in some respects, we use to a limited extent to describe and communicate our abstract ideas to others with the aim of achieving something. This tool can also be used during technological innovation from idea generation to marketing it, or making it commercially successful and as well as when we just want it to add value to society and ourselves.

Culture- this refers to beliefs, values and generally a way of life shared among a group of people in an organization, nation or society. This usually influences how they see the world and is not necessarily static though it does not change drastically and rapidly.

Technological Innovation- In the context of this discourse it refers to a new or improved way of using hardware or software technology or both for commercial success and/ or value addition.

Pointers from Research

"Since early 1990s, the telecom sector in South Africa has undergone major changes, both due to technological changes and also due to government policy decisions towards liberalization of the sector. The government has been trying to expand the telecom infrastructure and also make telecom services cheaper and easily accessible to low income and rural population" (Baskaran & Muchie, 2006). However, their envisaged goal was not achieved due to other factors including the one discussed here. "South Africa has the Global Systems for Mobile Communications (GSM) market outside Europe, and is ranked among the top 20 in terms of internet usage….However access to ICT is not available to all people, particularly in the rural areas" (Baskaran & Muchie, 2006). These authors also mention that according to the sources studied, there is also a shortage of IT-literate staff to maintain information communication technology (ICT) equipment in South African rural areas. Hiles (2005), also highlights the results of a study involving 2,400 consumers, 152 SMEs and 100 large corporations which found that the digital divide in South Africa is not only due to the question of *haves* and *have-nots*, but that it is also a function of *knows* and *know-nots*. Use of ICT is believed by many to be central to economic development, hence in this article it is deemed nececessary to discuss it. However, if access to it and its utilization is something enjoyed by only a few members of the society, then the economic benefits will not be fairly distributed. It also follows that participation in innovation projects will be limited to only a few. One issue that has been identified as a possible inhibitor to the creation of a nation-wide culture of innovation is the issue of spoken and writen language. In this research it is evident that language as well as the indigenous cultures of local people can play a major role in determing success or lack of success on technological innovation.

Furthermore, when confronted with a complex problem, group thinking seems to provide the advantage of enhanced creativity, flexibility, and problem solving skills that would be a daunting exercise and experience for one person. In group thinking there is a blend of perspectives emanating from a fusion of cultural and other backgrounds (see Sopazi & Andrew, 2006b). This, therefore means that STPs need to be approached from a multi-cultural perspective in a developing country. By this is meant that all stakeholders in a country should be involved regardless of their economic, social, educational, and linguistic backgrounds (see Sopazi & Andrew, 2007).

Some contributors to the ICT research have pointed out that there is a problem in the management and sustainability of these ICT centres after they have been established (Sopazi & Andrew, 2006a). They do not seem to be able to recover all their costs and therefore soon "die". Some of the failures are attributed to the lack of security and commitment. This is because nobody feels solely responsible for their sustainability, especially in the rural areas. Where there are many people involved in a project, the system tends to be very bureaucratic and boring. Even to decide on a small thing that requires pro-activity, a meeting has to be called for everyone involved to have a say in the decision making effort. By the time those who are involved manage to meet and make a decision it is sometimes already too late and the damage done. There is nothing in the literature that the author has reviewed that seems to support a model that involves many people in the decision making process. Instead, many variables that impede the process are highlighted. These include levels of understanding about issues, levels of commitment, technical knowledge, and a lack of entrepreneurial approaches. What this means is that while democracy is good, it can also be a problem when it comes to getting the work done in a timely way.

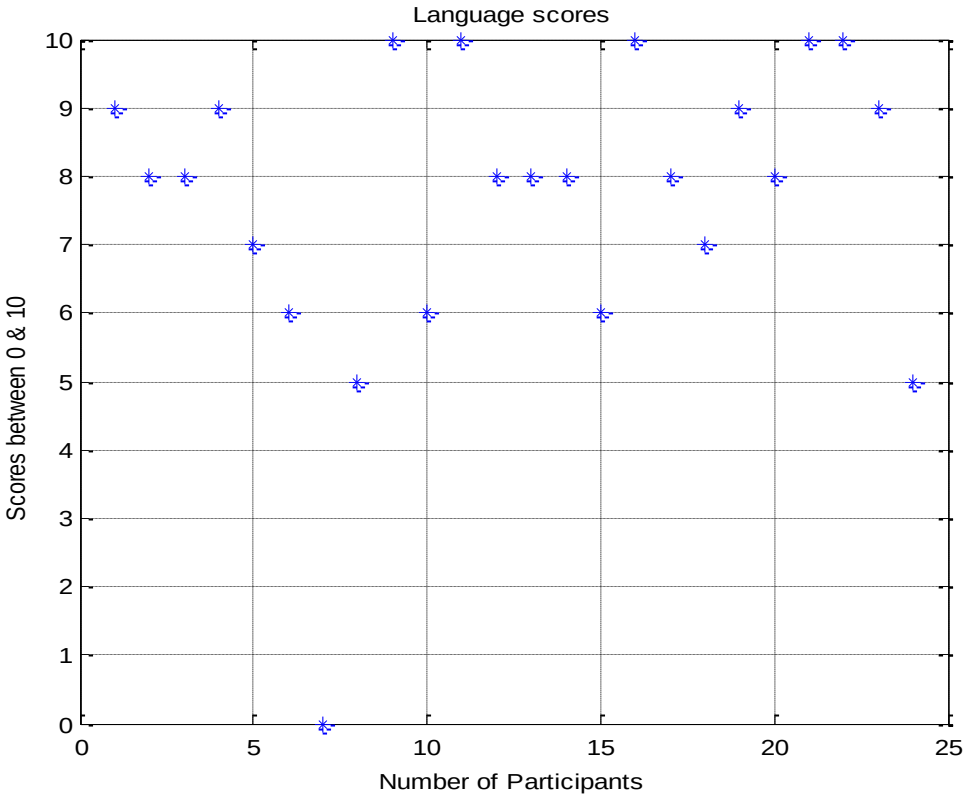
Conversely, from the cases studied by the author, a lack of comprehensive stakeholder participation during the planning phase of an ICT project is equally problematic with respect to issues of sustainability. If some other stakeholders have not committed their support at the beginning of the project due to not being involved during planning, one can be sure that sustainability of the project is threatened.

Role of Language and Culture on STPs and ICTs

The following figures, 2 and 3, have been generated from responses given by some top technology innovators who were interviewed in South Africa in the year 2007. The main purpose of the study was to investigate whether or not language and culture play an influential role on technological innovation and if so what kind of a role and to what degree. At first, 20 experts in the field of technological innovation, creative design, and engineering management were casually interviewed to gain insights and opinions about the study. These expects were from many countries including, Germany, India, United Kingdom, United States of America, Sweden, Nigeria and South Africa. They assisted the author in terms of finding an appropriate sample of participants as well as in fine-tuning the research framework and methodology for data collection.

This study was conducted mainly in South Africa's nine provinces. 88% of participants were from the major provinces in South Africa namely, Gauteng (Pretoria and Johannesburg), Western Cape, Eastern Cape and KwaZulu Natal. Face-to-face interviews were used though in some instances telephone interviews were also used. 22% of participants collectively from India, United Kingdom and Germany were also interviewed telephonically. Most of the participants were from the following industries: Software Technology Design or Information Communication Technology (ICT), electronic engineering design, mechanical manufacturing and design, as well as science and technology research and development firms and institutions. Both males and females of various races, age groups, education, beliefs and societies, and language and cultural backgrounds were used in this study. These are the innovation award winners that had been identified through a rigorous process of novelty judgment and testing by appointed innovation experts who were mandated by the Department of Science and Technology in partnership with other innovation institutions in South Africa.

Figure. 2, Role of Language in Technological Innovation



According to figure.2, 23 out of 24 participants have given a rating which is between 5 and 10. 16 of them have given a rating as high as 8 and above. This therefore shows that, technology innovators regard language as an important factor in technological innovation. However, all the participants who were interviewed disagree with Man (2001), when he says that the language used is crucial to opening the side of the brain that triggers innovative inquiries. They say any language is capable of triggering innovative inquiries and that business and international languages are only important for two purposes, which are:

- Communicating abstract ideas when trying to share or access information valuable to the innovative idea.
- And, commercializing or finding and convincing the potential users of an innovation

Figure.3, Role of Culture in Technological Innovation

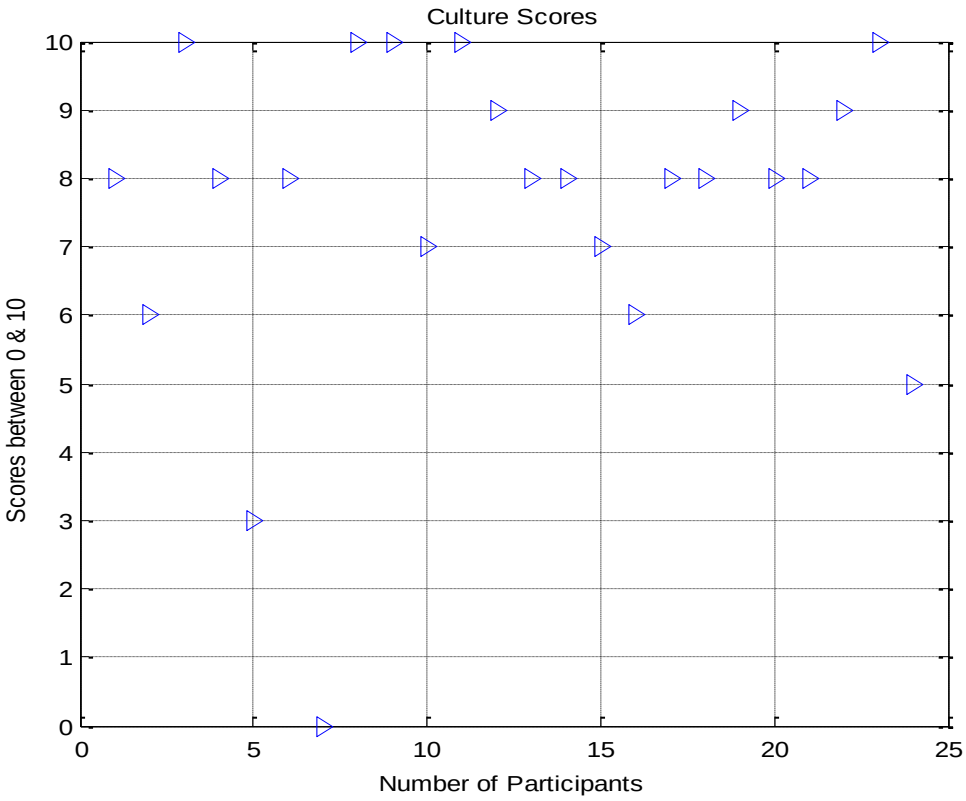


Figure 3, also shows that most of these same participants regard culture as an important factor in technological innovation as well. 22 out 24 have rated culture from 5 to 10, and mostly from 8 to 10, which is similar to the conclusion made about language. Many researchers also agree with the understanding that culture is important in technological innovation (see, Pech and Slade, 2004; Martins and Terblanche, 2003; Knox, 2002; Miroshnik, 2002).

Another critical success factor for the sustainability, and effectiveness of technology transfer of an ICT initiative, is sensitivity to indigenous languages and cultural issues of end user stakeholders. Lack of sensitivity towards these two issues, namely indigenous language and local culture has been observed by the author as a threat to sustainability and effective technology transfer in the ICT projects that have been initiated and supported by governments including the South African government. Cases studied by the author in the Eastern Cape Province and elsewhere in the country have shown that people tended to use the telephone service situated at or near the ICT centre or telecentre much more than they used the internet and email for information access and communication. The findings reported about here attest to that.

Findings revealed the following points:

- People from rural communities in South Africa come from a strong culture of talking (oral traditions), rather than reading and writing.
- Language used in the technology parks is English especially in the use of the Internet and Email.
- Talking on the phone was less of an effort in terms of communication and interacting with the device itself, and this was not the case with Internet and email.
- Cost of using the phone (landlines and cellphones) was minimal compared to using Internet and Email.
- Time needed to figure out how to use Internet and Email raised the cost of using them up even higher.
- In general, from both a language and cultural perspective, a telephone was a much better option compared to Internet.

Conclusion

Finally, the author concludes that, the establishment of these mini-STPs only serves to increase the wealth of a few elite and also foster a culture of innovation among few individuals in a developing country with predominantly rural areas and where most people have access problems due to cultural differences and language obstacles.

All categories of stakeholders need to be taken into account from the beginning of the process of introducing STPs. Sensitivity to the feelings of the community people has to be applied, especially in underdeveloped communities.

It is hoped that although what has been discussed in this paper was predominantly based on lessons learned in South Africa, the arguments and findings apply to other parts of the world as well, especially in the developing countries.

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