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Science Communication in a Diverse World

Infusing Science and Technology from the Ground up: A systematic Approach Applied in Lesotho

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Lesotho

Introduction

It is evident that the developed countries have laid solid foundations that have enabled Public Communication of Science and Technology (PCST) to take root for support of socio-economic development while on the other hand, developing countries such as Lesotho are left behind and are only starting to formulate systems suited to local conditions, needs, opportunities and challenges. Science communication is invariably pursued for the purpose of creating a common undertaking that could lead to socio-economic upliftment of the general public living in diverse geographic and economic settings. This paper outlines the systematic approach that was employed in Lesotho for creating common understanding intended to maximize benefits that are inherent in Science and Technology (S&T) advancement. It outlines the tools that were applied and proposes interventions that could accelerate the pace of development at national, regional and international levels.

Background

In 1996 it became apparent that the status of Research and Development (R&D) was at unsatisfactory level in Lesotho and drastic measures urgently needed to be undertaken to rectify the situation. The notion of S&T as a separate area of concern is new to Lesotho and moves in that direction are happening very slowly and with a great deal of skepticism (Edunet Consulting). Several organizations (including university, technical institutions, government departments, schools etc) were visited and simple questions were tabled before the authorities of these organizations. Simple questions that were asked were as follows:-

1. What was a criterion used for determining the intake of the students?
2. How was the number of students per field determined?
3. What training strategies were implemented?
4. On which bases were scholarships awarded?
5. What were the latest S&T inventions?
6. How many times per year was the local media used to publicize S&T news?
7. How much funding was devoted to R&D?
8. How many people were engaged in R&D projects/programmes?

Responses to these questions gave a clear signal that Lesotho was left far behind on S&T issues. It was evident that little was being done to use S&T for improving the economies of the developing countries such as Lesotho.

Realization of the Problem and Establishment of a Coalition Team

Responses to the questions mentioned above clearly showed that there were problems that needed urgent attention. It became evident that the challenge was too big to be left to any one person. Science communication requires interdisciplinary teams capable of identifying the problems, creating and implementing solutions and widely advocating for support and change. From the discussions, which were undertaken, it emerged that two institutions that were not more than 4 kilometers from each other were working on a similar project but they were not aware of this. This is a clear example of lack of communication among those concerned in the issues of S&T.

A concerted team approach was adopted for dealing with the challenges. John Kotter's 8-stage process that entails establishing a greater sense of urgency, creating the guiding coalition, developing a vision and strategy, communicating the change vision, empowering others to act, creating short term wins, consolidating gains and producing even more change and institutionalizing changes in the culture was utilized. Kotter and Cohen outline the eight steps – "that few people handle well" – to describe the flow of effective large-scale change. Urgency, for example, is a foundation that sustains flow. Urgency gets people off the couch, out of a bunker, and ready to move (Sunday times, 2002).

An interdisciplinary team initially made of 10 people drawn from the government, university, technical institute and individuals was established. *The team comprised people who demonstrated desire and passion for utilization of S&T for reduction of poverty*. Opening doors for participation of other organizations as the process gained momentum increased the number of team members. The team made largely of middle managers generated a vision and strategy that was shared by all concerned, and went on to outline the problem as follow:- "In Lesotho, the application, exploration and exploitation of scientific and technological know-how is impeded by constraints such as lack of awareness and appreciation of S&T, inadequate funding, inadequate facilities for utilization and exploration of technological know-how, a dearth of skilled and experienced personnel, massive brain drain, improperly structured institutions, non-functional national policies for human resource development, where they exist, etc." It was realized that substantive change and success could be achieved provided general public is

curious and made aware of the unsatisfactory. Working behind the scenes could not bear immediate results.

Intensive Communication Approach Opted

In response to addressing unsatisfactory status of S&T, it was deemed urgently necessary to involve and raise awareness of the general public. The team decided to meet regularly and come up with a communication strategy that would accordingly address the problems that had been identified. The strategy that was drawn entailed:

- Meeting regularly;
- Lobbying for the S&T support;
- Drawing a joint calendar of S&T events,
- Participating actively at S&T events;
- Hosting conferences, workshops and seminars for the public at all levels;
- Supporting each other on S&T and related issues;
- Involving and collaborating with the media,
- Publicizing and replicating success stories;
- Using radio programmes regularly;
- Holding S&T fairs and exhibitions;
- Searching, validating and promoting indigenous knowledge;
- Initiating projects and creating success stories and
- Communicating and influencing S&T transformation.

The following integrated approach was systematically used in the communication process:-

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  communication within the context of local conditions, needs, opportunities and challenges and
- Simplification and relationship with daily living.

Communicate and Implement as You Plan Approach

A question to be posed and answered is "what is the starting point as far as S&T communication is concerned?" It has to be noted that first the problems were identified and then it was realized that to solve them it was imperative to embark on a national execution strategy, which facilitated communication among the role players. Communication was pursued to address the problems identified and implementation of specific projects was undertaken to create short-term wins and infuse confidence into the process while continuous planning and readjustment was carried out to reflect steps that needed to be taken to address challenges that emerged as the process milled on.

Conferences, Workshops, Seminars and Field Tours

As a move to communicate S&T widely, an initiative was taken, to host a catalytic conference which was entitled "Promotion of Technological Capability in Lesotho". The conference was successfully held late in 1997and attracted more than expected participants (around 20 people participated without having registered for the conference). This conference was first of its kind in Lesotho and had been extensively publicized using a popular phone-in radio slot (lasting for 2 hours and 30 minutes), which usually a lot of people call in to. Immediately after the programme started, we indicated how simple and useful technology was in assisting us to reach listeners in their home. Unexpectedly little number of listeners phoned-in. People were asking what was technology all about and whether countries such as Botswana were using it for development?

As part of infusing interest in S&T, the participants to the conference were offered an opportunity to tour the sophisticated, state of the art and technologically appealing Katse Dam. They saw and learned about technologically complicated Katse dam, special commendation award winning bridge that crosses Katse Dam and saw the indoor model of the dam. *The high International profile and record breaking scale of the M1,3 billion Katse Dam, unique in Southern African, received special recognition in the 1998 awards for excellence in Consulting Engineering (Water for Live, 1999).* The tour offered the participants an opportunity to see how technology and engineering is applied in real situations. Indeed, after such a tour, relatives, friends, colleagues etc of participants heard a lot of stories about the dam and thus S&T communication had in a small and simple way been achieved. *The focal point and centerpiece of the Lesotho Highlands Water Project (LHWP), Katse Dam, is a monumental piece of engineering, inspiring awe in any one who sees it. The dam is a double curvature concrete arch, 185m high, and 710m along the crest (Partners for*

Live, 2001). (Those who are interested to learn more and communicate about engineering know-how applied at Lesotho Highlands Water Project (LHWP) are advised to visit: www.lhwp.org.ls).

The conference formulated and adopted resolutions that covered the following:-

- Promotion of appropriate technology;
- Formulation of policy for science and technology;
- Synchronization of scientific and industrial research with national development objectives;
- Promotion of appropriate technological education in Lesotho;
- Way of promoting and communicating technology;
- Addressing relationship between technology and curricula;
- Participation of the end-users of technology;
- Involvement of Women, youth, special groups relevant to technological development and
- Setting the priorities systematically right for promotion of technological capabilities.

Then three more and highly successful workshops followed, two regional (1998), one for the southern part and the other for the northern areas of Lesotho, and the third one in 1999 which attracted lot of people, was held for the political leaders. Some of political leaders had indicated that they will attend only the opening session but at the end they spent two days at the workshop without missing any presentation. The workshop for the political leaders facilitated transfer of the concept of Zero Emissions Research Initiative (ZERI) to Lesotho, which the local media went mad about and publicized widely. ZERI project is currently being implemented in Lesotho. A project emerged from the workshop that was meant to sensitize and raise awareness among the political leaders. Will any S&T communication and development project emerge from this conference? Time will tell.

After the workshop, which was organized for political leaders, participants were taken on a tour of the rural based Bethel Business and Community Development Centre (BBCDC), which has lately turned into a tourism attraction center. The number of the people that are flocking there annually evidences this. Development activists, students, youth, women, decision makers, academics from Lesotho and abroad have visited BBCDC.

The Visit to BBCDC gave the participants an opportunity to see and learn how different rural technologies are applicable and beneficial in a remote rural setting.

They learnt and saw the following:- how solar energy is harnessed for different domestic uses; how buildings have been constructed within the context and principles of appropriate technology; how the environment was restored; how permaculture was used for crop production; how simple appropriate products were utilized etc (for more information on BBCDC visit http://www.lesoff.co.za/bbcdc). Those who visit BBCDC always come back with a lot of stories, which they usually tell to other people. If this is the case, does the approach to visit S&T facilities prompt any communication? A simplest answer is yes.

Celebration of Special Days and the Cultural Promotions

As an effort to beef up awareness on S&T issues, it was decided to introduce and celebrate technology media day on which the media personnel could interact with those who are involved in the S&T business. The technology media day was introduced in 1997 and attracted media personnel that have actively participated in two successive years. In 1999 on the day of celebration, one of the radios had an item on the technology media day in their mid-day news slot. Immediately after the news, the public started flocking to the place where celebration was held. Lately the media has been actively debating and writing on S&T issues and thus participates in the communication process. Celebration of Africa technology day (involving participation of the decision-makers, youth and S&T personnel etc) for the past three years has also been widely used. Choir and cultural music, traditional games, drama, poetry etc have been used to communicate message on S&T issues.

In the 1980's the African National Congress (ANC) was looking for new ways of getting its message across to opinion-formers in South Africa, and Vernon February showed how useful culture could be a vehicle for this. The conferences he helped to arrange in Holland and Germany were important ice-breakers (Sunday times, 2002). Indeed, this shows that cultural activities can be used to communicate S&T.

Exhibitions, Fairs and Presentation of Awards

Exhibitions have also been intensively pivotal in the promotion of communication of S&T. Couple of exhibitions (including trade fairs, agriculture shows etc) which involved pupils, students, entrepreneurs, farmers, decision makers, technical personnel etc. have been held and included issuing of awards. Some of the innovations and inventions which have been displayed include:- Traffic lights for visually impaired people; home made flask made of wool and mohair; prototype of a lodge that is build over a river; adjustable podium, improved stone mill; beer mug and chair made from aloe, cutlery stand (registered under industrial design) etc.

Individuals and some institutions knew about Appropriate Technology Section (ATS) from the shows, which were organized by the Lesotho Manufactures Association and Agricultural Activists. ATS exhibited its products at these shows. Also they heard about ATS from the radio and saw some ATS pamphlets (Thope Matobo et al 2000).

Radio Programmes

Popular programmes of three radio stations namely Moafrika FM (privately owned), Radio Lesotho (owned by the government) and Roman Catholic FM have been and are still being intensively used to communicate S&T. Moafrika FM allocated a weekly slot (1hour per week) for period of one year. Roman Catholic and Radio Lesotho have allocated weekly slots for Intellectual Property matters.

In the United States, television is the leading source of information about new developments in science and technology, followed by books and newspapers. In South Africa patterns of media usage are different. "Radio, particularly African language radio, is altogether the most far-reaching of the mass media and thus recommends itself for use in public understanding interventions. It is affordable and within reach of almost every member of the target audience…. (Mail & Guardian, 2001).

Replication and Communication of Success Stories

Any success stories in the country and the region have to be highlighted and deliberately brought to the attention of the common people. People will relate to and appreciate much easier, achievements by those they know and leave with. In this way S&T ceases to be a rarified as an academic exercise and comes into the realm of every day living. Replication of the successful ventures where feasible, is also an effective way of extending the outreach of S&T. In Lesotho the BBCDC has been replicated in two areas. The process enabled to bring services closer to the communities and thus reduces the burden of traveling for long distances searching for the services, which can now be easily accessed at BBCDC, and areas where replication took place. South Africans under Joint Bilateral Commission of Cooperation (JBCC) with Lesotho have also shown interest in the replication of BBCDC.

Science influences all our lives profoundly, and the most elementary ethics say that whoever affects the lives of others had jolly well better ask permission first (a principle singularly ignored by the creators of genetically modified organisms).

Besides, communication is fun, and given that Stephen Hawking sold 3 million copies of A Brief History of Time in hardback, it can be immensely profitable[1].

Generation, Internalization and Adoption of Best Practices

Like in any other developmental endeavor, it is not necessary to "reinvent the wheel" in S&T communication. It is much easier and more cost effective to adopt strategies and techniques that have been effective elsewhere, albeit with some perfection adjustments and modification to suit local conditions. Generation of the best practices is crucial for success of S&T communication.

Simplicity - the Key to Effective S&T Communication

One of the first questions we were asked during the radio programme was "what is technology all about, and do other countries e.g. Botswana use it for development?" This question taught us that simplification of science and technology is very essential. People should understand that S&T is part of their daily lives. They should understand that ***they eat, drink, breath and sleep*** science and technology on daily basis.

Explanation in local language and citation of relevant and visible examples of S&T applications in daily living enhances appreciation of S&T among ordinary citizens living in the rural villages of countries such as Lesotho. Some people who live in the rural areas openly indicated that they now appreciate S&T following our radio programmes. This has been evidenced by the requests from some rural communities for assistance with S&T projects that would address developmental issues such as poverty and the environment. Some people would say, "I did not know that science and technology is so simple. Now, I have a feeling of how I use it daily in my house. Your radio programmes are wonderful, keep on with them. "

Pluralism in the S&T Communication

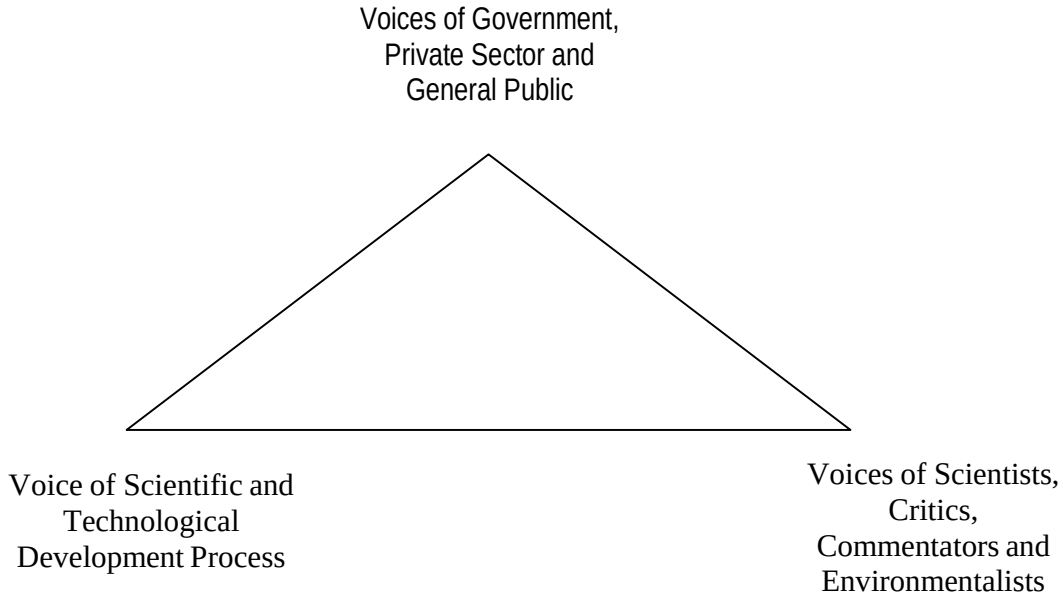
Science and technology has shifted from being rarified preserve for certain sections of society, to the center stage of socio-economic upliftment of the masses. The degree of this shift is the difference between developed and developing nations. Developing nations are only starting to view science as development tool instead of just an academic discipline. This repositioning of S&T mandates that broader participation and stake holding be facilitated. All sections and formations of society have to be capacitated to critically and meaningfully become part of the process of

[1] http://www.independent.co.uk/story

advancement and application of science and technology. Well, Edmund Burke referred to the press as the fourth estate, which broadly includes the penumbra of reporters, commentators, critics, and essayists that surrounds each and every mature discipline. Science should also include contributors from other disciplines such as literature or indeed anyone who has something interesting to say[1].

Pluralistic Communication of Science and Technology

In the process of science and technology communication, it is crucial that all the viewpoints are taken into consideration (Sekoja Phakisi and Paul Smith, 1999).



Adopted from: *Simmons Dickson Consulting and Training*

Indicators of Communicated and Appreciated Science and Technology

Some of the indicators of successfully communicated and appreciated science and technology are as follows:-

1. In general, debate is getting healthier on S&T issues.
2. Inclusion of the technology in the statement of the national vision 2020 for Lesotho.

[1] http://www.independent.co.uk/story

3. Replication of BBCDC in two rural areas has given the process the required impulse and also assisted to bring the services closer to the communities.
4. More S&T projects are emerging.
5. S&T columns have appeared in the local newspapers.
6. S&T policy and strategy have been codified.
7. S&T institutions are finding it easier to operate with their demands being easily met.
8. The process of establishing a new institute of science and technology are at advanced stage.
9. Professor Maboe Ramoshebi Moletsane who is one of the advocates of S&T and one who led establishment of Taung Skills Centre won the Annual Desmond Tutu Footprints of Legends Leadership Award for 2002. Indeed the project, which enabled him to win the award, has got a strong component of S&T.
10. The faculty of Science was transformed to the Faculty of Science and Technology at the National University of Lesotho. Undergraduate degrees in engineering have been introduced for the first time.
11. At the workshop held for the political leaders, it was highlighted "in terms of water, Lesotho is the richest country in Africa. Bottling water from springs could be a major source of exports in a continent where this commodity is so scarce" (Sekoja Phakisi and Paul Smith, 1999). At the time we said this, bottling of water was non-existent in Lesotho. At the present time water is bottled in Lesotho.

Unfinished business and Interventions to be Undertaken

As mentioned earlier, S&T communication has led to the emergence of some development projects in Lesotho. Replication of BBCDC in both Lesotho and South Africa can be cited as an example. Structures and programmes have to be put in place aimed at facilitating and supporting local inventions & Innovations and more importantly, commercialization of those that demonstrate commercial potential. The role-players at local, regional and international levels should support these projects. Collaboration and flow of information between South : South and South : North (including collaboration among local role-players) should be strengthened.

Collaboration with the media in the communication of S&T should be promoted and supported. S&T communication must be more democratically inclusive and responsive. Critiques must be accepted as a tool that improves the process as opposed to being viewed as a destructive force.

Lately, Poverty Reduction Strategy Paper (PRSP) has emerged in the countries such as Lesotho. Alignment of the PRSP with the purpose of S&T communication is very crucial for improving the well being of the poorest of the poor. S&T communication should be contextualized within the parameters of PRSP. Science and technology should be proven beyond any doubt that has a stake in reducing poverty. At one stage of our development endeavors, we have to say boldly "communication of S&T has enabled to generate wealth even for the poor people".

Continuous improvement of S&T communication

An experience has shown that S&T communication leads to emergence of new challenges, which required to be accordingly tackled. This would mean that S&T communication requires to be subjected to continuous improvement techniques, which can facilitate its relevance.

Lessons Learnt

As stated earlier, communication of science and technology as a driving force for socio-economic development is a new phenomenon in Lesotho. Therefore, we were mindful of potential for making mistakes and were ready to learn as we go. It was a given that we would come out of the process having learnt a few crucial lessons. This we did, and some of important lessons learnt include:-

- Whatever strategy is adopted should aim to achieve some success, however small or short term, within very a short time as this gives impetus and momentum to the process.

- Mass communications tools (e.g. radio) are very effective outreach vehicle for S&T communication. Established and popular radio programmes are usually effective.

- Highlighting local and visible achievements (success stories) generates a lot of interest as people easily relates to such.

- Political and community leadership in general should be specifically targeted as they can be effective in the exercise of S&T communication once they get to appreciate the importance of S&T.

- S&T communication needs zealous leaders to champion its course tirelessly.

- It is important to consistently stay receptive to feedback and be flexible enough to rapidly readjust accordingly.

- It is possible to turn around some long held believes and attitudes. The "it has never worked - it will never work" attitude that was so prevalent in Lesotho has been turned on its head.

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