

11. Using the Mass Media to Promote Science and Technology

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Introduction

In much of sub-Saharan Africa there is no mass media in the sense that messages reach the bulk of the people. Only elites have access to television. Radio, which was once the furthest reaching of the mass media, is becoming less used as economies deteriorate and the price of dry-cells goes up. Newspapers reach only cities and the larger villages, and are often days late. Magazines are treasured, wrapped in brown paper and read over and over again. For the most part, recurrent budgets restrict publication to only the occasional leaflet by ministries such as those of agriculture and health. The most widely available reading material is the bible, or the Koran in Islamic areas, followed by ancient, out-of-date, school textbooks. Mass media in sub-Saharan Africa remain basically traditional and oral, and unlike in industrialised countries, schools are the most frequently found and visible source of input to these traditional networks. No discussion of how to use the mass media to disseminate science and technology can ignore targeting young people with school-based programmes and activities such as science clubs, or interpersonal media such as local science centres and museums. Furthermore, a dearth of modern mass-media infrastructures in sub-Saharan Africa, together with a continuing power of traditional media that are oral and interpersonal, implies that to maximise the effectiveness of what modern mass media exists, it must impact on and be culturally sympathetic to traditional media.

A school-based museum

One of my favourite museums used to be located in an old wooden classroom block in a village primary school in Kenya that was organised and run by the school science club. Along the back wall was a row of rabbit cages, each with its notebook of records on feed, breeding, diseases and so on. Pupils claimed that if the rabbits were fed a certain local plant they stopped breeding, but as soon as the plant was removed from their diet they had much bigger litters than usual. Their records certainly seemed to support their hypothesis. There

was a table with cardboard boxes from which two wires emerged. Question cards on the table challenged one to use the dry cells, wires, bulbs and other materials to try to find out what electrical circuit was inside each box. The bones table had an elegant display of femurs, from that of a giraffe to that of a minute shrew. A rabbit's skeleton invited one to try to assemble it; there were saw blades and various chemicals to explore the properties of bones. Questions and a variety of named liquids motivated one to try to identify 'mystery' powders on another table. The variety of displays was stunning and constantly changed. During my first visit I noticed cardboard boxes under each table and asked what they were. 'Well, you know what teachers are like, Mr. Mike', one boy responded. 'They always just lecture so these are kits of materials they can borrow so they can do some practicals.'

Self-help associations

Sierra Leone

Until recently, far across the continent in war-torn Sierra Leone, groups of displaced young people could be seen throughout the country gathering together in the evening. Sometimes they go to a disco, sometimes they just hang out, sometimes they plan community activities. With help from the Home Economics Association of Sierra Leone, these young people were rebuilding their shattered lives.

Members of the Association were perceptive enough to realise that the primary need of these youngsters was a low-stress social life, hence the initial assistance with organising discos. Predictably this grew into something much more. Whilst hanging out, local problems could be discussed and action campaigns planned. Sanitation, preventive health and littering nearly always arose, and of course HIV/AIDS. However, a universal concern was how to earn a living, however modest. The Home Economics Association provided contacts, funds and appropriate back-up training to enable selected individuals to become apprenticed as dyers, weavers, carpenters, hairdressers, roadside mechanics and so on. When necessary it supplied loans to help them start up in business. A surprisingly high percentage of these young people did become successful within their own terms, and soon they in their turn became the master-craftspeople who could train other youngsters from throughout the country.

Malawi

Recently, the Wildlife Society of Malawi supported a campaign in one of the poorest regions that used youth to raise village communities' awareness of the need to use local resources in a rational and sustainable way. The campaign used wall art and street or path theatre to stimulate debate. The finals of the

drama competition were held in the regional capital and were attended by over 10,000 people.

The impact of another project, PAMET (the Paper-Making Educational Trust), can be seen in many schools and training institutions throughout Malawi. Using scrap paper scavenged from printers, embassies and donor offices, children in many primary schools make their own notebooks and classroom notice boards. Women's groups make more sophisticated products such as art stationary, cards, school globes, envelopes and diaries. Through clever marketing, regionally as well as nationally, PAMET is a financially viable institution that continues to help school children and local community groups to see the potential of science and technology to improve their lives.

Educators in Malawi are fully aware of the role of schools in community education and development. Indeed, the most recent wave of primary curriculum reform was called Community Orientated Primary Education (COPE). Multimedia teacher development materials advocate basing children's science and technology learning on community practices and understanding. School environmental clubs monitor community water supplies and institutional resources, and become engaged in activities such as tree planting together with the local community. *Join In*, the magazine of the science and mathematics teachers associations, regularly runs competitions for the best entries on community activities such as local technologies, indigenous medicines and teeth hygiene habits. The science teachers' association created a special category for school science fairs for out-of-school youth.

Zanzibar

Zanzibar has a thriving network of teachers' centres that it uses for community science and technology education. One project works in these centres by the coast with teachers, students and community leaders to implement action campaigns on the rational and sustainable use of coral reefs. I became aware of another campaign when I talked with a group of Standard Four pupils about whether they knew of the activities of the centres. 'They are the best thing that has ever happened to this village', a traditionally dressed Islamic girl exclaimed. 'They have taught the people here about women's rights and now us girls are given time off household chores to do our homework just like the boys.'

Modern Mass Media

There are examples of the use of modern mass media to educate the public, especially young people, about issues involving science and technology. Most

are targeted at schools, and have come to realise that for maximum impact they must include face-to-face, interpersonal elements.

Print media

Action magazine, published in Zimbabwe, is an outstanding environmental magazine for young people. With a plentiful use of graphics, *Action* uses cartoons, puzzles, competitions, stories, interviews and so on to motivate young people to discuss a full range of environmental and health issues. Often, the magazine is the only print material to be found in schools. Distributed free of charge, 10 copies of *Action* are sent to every primary school, secondary school and training institution in Botswana, Zambia and Zimbabwe. On occasion special editions, for example that on HIV/AIDs, are translated into local languages and also distributed in other countries such as Angola, Namibia and Mozambique. Whenever possible *Action* organises visual literacy workshops for teachers, education officers and community leaders. Since the magazine is intended for the poorest in very poor countries, its publication is in no way sustainable despite attempts to market it to elites and tourists, so *Action* sells its considerable design and publishing skills to many other local organisations.

Join In, the magazine published in Malawi for students jointly by the mathematics and science teachers' associations, has already been mentioned. Other professional associations throughout sub-Saharan Africa, such as those in Ghana and Lesotho, publish similar magazines intended to involve students in using the local community and resources to learn scientific and technological skills, building bridges between school learning and community knowledge and thus enriching both. A similar approach has been effectively used by Mazingira, a Kenya-based NGO, that has published cartoon booklets on, for example, animal husbandry, that reach community members through schools. The Kagera Writers and Publishers Society on Lake Victoria far from the Tanzanian capital published a monthly newspaper with a youth section, as well as supplementary materials for schools. The society cleverly solved distribution and marketing problems by 'piggy backing' on farmers' co-operatives that had appropriate infrastructures. For years Jacaranda Designs in Kenya ran a section for youth in the largest-selling newspaper that included sections relating to science and technology, as did newspapers in Uganda, Ghana and other countries. Alas, the experience has been that as soon as the newspapers feel they could do the job themselves, quality as well as sales falls.

Television and videotape

Though many programmes in sub-Saharan Africa, such as STAG and the teacher development programme in Malawi, use videotape and slide-tape, few

use broadcast television. Television is costly both to produce and to receive. Perhaps not surprisingly one of the most effective uses of this media is *Spider's Place*, a South African science and technology programme for upper primary and lower secondary school children. Spider, an adventurous girl, is the leader of a multiracial gang of puppet characters that in every episode get themselves into some scary scrape from which they escape thanks to their scientific and technological skills. The programme is broadcast on radio for schools without access to television as well as through comics for places that have neither. Sophisticated though *Spider's Place* is, Handspring Puppets, the production company, went into partnership with another NGO with a large teacher development programme.

Museums

Many museums in Africa use their permanent displays, good or bad, for special educational school tours. Few have exhibits especially designed for young people, indeed for anybody other than those who attended museums anywhere in the mid-twentieth century. The National Museum of Kenya is an exception, with an exhibit that travels to regional museums illustrating the potential for learning science, technology and mathematics using local toys and games. The exhibit is, however, static and non-interactive. The Cape Technikon, in Cape Town, South Africa, does have an interactive display mounted in a large truck that tours schools and provokes much excitement when it visits.

Discussion

To most people the term 'mass media' connotes film, television, radio, newspapers, magazines and information technology – all terms drawn from industrialised countries. I contend that even within that context such means of communication may not be the most effective. I am sure that most people have shared my experience of having been shown round a display – for me it was the optics exhibits in the Exploratorium in San Francisco – by the designer or some other knowledgeable enthusiastic person. I became completely absorbed by pinholes and their images, positive and negative. To this day, the hairs stand up on the back of my neck when I point to any spot in the air around me and think of the mass of information there that I could read if I had the appropriate instruments. Museums in industrialised countries have headphones that can be hired for the tour, but despite my attempts they always ignore my questions and anyway I do not believe I could ever make friends with that voice. Perhaps media in industrial countries have come to rely on technology because labour costs are too high. Maybe we are fortunate in Africa that we can maintain a strong element of the personal in our media.

The contrast between the experience of being a visitor in the village museum I described in Kenya with that of touring the national museum was striking. Not only was the personal milieu more sympathetic – so too was the cultural.

Traditionally, modern mass media is designed on the assumption that the audience is solitary and has little time. Neither is the case in Africa. In many parts of the continent the arrival of strangers is welcomed as the entire village congregates to hear the news they bring. Story-telling, drama, poetry, song and dance are some of the mass media in Africa; all have their own conventions, a deep knowledge of local culture, establishment of a personal relationship and time.

I have argued that those concerned with mass communication in the countries of sub-Saharan Africa, whatever the message, must be sensitive to these conventions of traditional media. They must target modern mass media in ways that can be absorbed rapidly and deeply by traditional media networks. One of the most effective mass media campaigns I have participated in took place in Mogadishu, Somalia in the mid-1980s. A group of health education curriculum staff were developing materials in schools, and it happened that they tested a series of games, puzzles and stories during Ramadan. The very night they had introduced these to a handful of schools, adults were playing the games in tea-bars. Parents with children in other schools clamoured for the materials to be given to them. School attendance figures shot up. Curriculum staff were pestered in the streets by adults and children for the next instalment of the stories that were printed as broadsheets. In the long evenings of breaking the fast, whole extended families entertained themselves with the materials. Poets composed appropriate songs about the major characters in the stories. What else had they to do? There were few television sets, movie theatres, books or DV drives, yet Somalis are well-known story tellers who value the poet and the musician much more highly than the warrior. The curriculum staff had stumbled on an effective way to feed messages into the traditional culture.

A final point: this chapter has largely focused on the use of schools as the entry point for mass media educational programmes, contrary to recent research in industrialised countries that shows the limited impact that schools have on young people's learning compared with what they learn from the modern media. I justify this focus since very few of the people of the countries of sub-Saharan Africa have access to television or film, though the advent of the VCR is leading to an outburst of rural and urban 'cinemas'. In any case, most governments lack the financial resources to programme for these media. Newspapers reach urban areas and major rural villages and some efforts are

made in Africa to use these to carry scientific and technological messages. However, most communities in Africa have moderately easy access to schools which, apart from the small store, are the most widely distributed manifestation of modernisation. Communicators, I argue, would do well to target schools directly and use them as entry points to the rural and urban poor of Africa.