

# *Provision of agricultural information for development: a case study on crossing communication boundaries*

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Information provision appears to play a significant role in development projects in rural communities, despite the fact that it is not the sole concern of development agencies. Investigation of a successful training programme on maize production proved that integrating knowledge of the target group's information behaviour and their use of communication mechanisms into development strategies can help to effectively cross the boundaries between the modern information resource system and that of the indigenous knowledge system. It is argued that field workers operative at the inter-

face between the developed world and the target groups in rural communities are ideally suited to the direct provision of information in a situation-specific context. However, field workers should be made aware of the value of information, as well as of the information behaviour of rural people used to handling information within an oral culture. The Merger Model depicts the way in which information from both the modern information resource system and the indigenous knowledge system can be harnessed for the transfer of information through development projects.

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## *Introduction*

There seems to be a sense of despair among policy makers, development agencies and other people involved in development endeavours about the slow progress being made to bring about change in the plight of the rural poor (Camble 1994). The gap between the developed and the developing worlds appears to have remained, if not widened, despite all the effort and investment that have gone into improving the lot of the rural poor. The literature of the last few decades provides enough evidence to lead us to believe that information has an important role to play in economic and social development (Boon 1992; Mchombu 1993; Sturges & Neill 1998; Rosenberg 2001).

Much of the information provision in rural communities takes place through development projects, although this point is not always appreciated. Developers are in a good position to

provide appropriate information direct to rural people at grassroots level. However, this type of information provision is subject to a number of problems that could compromise its effectiveness. Firstly, developers do not view information provision as their first priority. In fact they do not always realise that information is the hidden part of the product or procedure they are introducing to their target groups. Sturges and Neill (1998: 118) posit that developers are often unaware that 'information constitutes the key ingredient' in national, scientific and technological development. Secondly, for many people in rural areas information is an abstract concept which they do not view as something that could help them to solve a problem (Rogers 1992; Rosenberg 1993). So, they tend not to search for information as such, but rather for advice from a knowledgeable person whom they respect for his or her personal wisdom (Botha 1991; Olson 1994; Rosenberg 1993).

Thirdly, developers and target groups draw on different types of information resource systems to provide their information needs. Developers depend on the modern information resource system and the target groups which primarily originate from an oral culture depend on the indigenous knowledge system.

These problems have serious implications for information provision in rural communities. One implication is that information provided through development projects needs to cross the communication boundaries of two different cultural environments. Investigation of the Phokoane case (Meyer 2000) indicated that information provision through development projects can effectively cross these communication boundaries. The Phokoane case refers to a training programme for small-scale farmers originally devised in 1989–1990 (Adendorf 1991). Its acceptance and implementation by farmers of the Phokoane community resulted in harvesting of bumper crops and a demand from more farmers to be trained. This discussion is based on the above-mentioned investigation.

### *Methodology*

The aim of this investigation is to establish how agriculture-related information from the developed world is transferred to small-scale farmers in a rural community. A qualitative research design (i.e. a case study) has been chosen as a research strategy, because very little is known in the field of information science about information handling among people originating from an oral tradition, or about variables that may affect these people's information usage behaviour. This type of research design allows one to focus on the real-life context where the investigator had no control over the event (Yin 1989; Merriam 1988). Causal links in real-life interventions that are too complex for the survey or experimental research strategies can best be explained by qualitative research. Valuable insights are usually obtained which would not have been possible otherwise (Fraenkel & Wallen 1991).

Qualitative research such as case studies (in this case a historical case) is believed to be best suited to the answering of "how" and "why" questions (Yin 1989). By investigating the history of the Phokoane case regarding the training of

small-scale farmers in growing maize effectively, it was possible to establish *how* information regarding the subject was introduced to the target group. By relating the particular training techniques employed in the Phokoane case to techniques used for the transfer of information, it was possible to understand *why* the development programme was implemented successfully. The Phokoane case offered a unique opportunity to scientifically explore and explain a programme that was designed to solve a practical problem where the designer of the programme did not have prior knowledge of information transfer strategies.

Since the Phokoane case is an historical case study, no assistants were used to collect evidence. Information for the investigation was primarily obtained from the following sources:

- Documentation, which included the original training manual, annual reports of development corporations involved in rural development, newspaper clippings referring to the Phokoane case, archival records such as official letters, a list of names of participatory groups, schedules for training sessions, test results of participants and certificates awarded to successful participants
- Audiovisual material including a set of videos capturing the different phases of the training programme
- Interviews with trainers, officials and a number of small-scale farmers who participated in the original training programme
- Direct observation during visits to small-scale farmers and field visits to rural communities
- Physical artefacts used in practical demonstrations during the training sessions

For this investigation data analysis and data recording were conducted simultaneously with the interpretation and report writing as is the case for qualitative research according to Merriam (1988) and Marshall and Rossman (1999). A presentation of the life history of the Phokoane case was followed by a description of the consecutive steps of the training programme. The contents of the training programme was analysed and interpreted as a method of transferring information to small-scale farmers in rural communities. In this process of analysis a hypothesis was developed regarding the information usage behaviour of rural people originating from an oral tradition, as well as a hypothesis regarding the value of information as a resource for the development of rural communities. The complete data analysis

and data recording procedures followed, as well as the verification and reporting applied as described in Meyer (2000).

### *Literature review*

A wealth of literature on information provision has accumulated, but no studies regarding information provision to rural communities could be identified which have as their major focus the impact of non-literacy on the manner in which adults in rural areas handle information. Research regarding the crossing of communication boundaries from the developed world to the developing world seems to be fairly limited in the field of Information Science. Sturges and Chimseu (1996: 136) stated that information science has in fact neglected non-literate societies. In order to form a picture of how communication boundaries are crossed it was necessary to learn from a variety of other subject fields how they addressed the problem for their own purposes. Regarding subtopics such as information as a resource, the transfer of information, and user behaviour, it was possible to borrow ideas from other sub-fields of information science.

The provision of information to rural communities requires an understanding of the usefulness of information as a resource for development. There seems to be a general awareness that information is an important resource. Boon (1992) cautions that a lack of information may retard development, which in turn may have a negative effect on human development. Regarding information provision to rural communities, Camble (1994) expressed the concern that the quality of life in rural areas is continuing to deteriorate as successive rural development programmes are applied. He comes to the conclusion that the success of rural development programmes depends solely on the availability and use of quality information by rural development workers and rural people. With regard to farming practices in rural communities, Ozowa (1995: 17) ascribes the low level of adoption of agricultural production technology among small-scale farmers to the lack of information.

Information provision to rural communities also requires understanding of the potential users' information behaviour, their information handling skills and the variables impacting on their adop-

tion of outside information. Of value here are the views of Goody and Watt (1963) on oral cultures. Although their views addressed the question of orality as part of their broader approach to the social effects of literacy, reading and writing, they touched on aspects of the cultural tradition in non-literate societies (1963: 306), which are relevant to information provision to rural communities. Their views on how beliefs, norms, values and all forms of knowledge are communicated between individuals in face-to-face contact shed some light on the information behaviour of people originating from oral cultures. It is believed that people originating from oral cultures form the bulk of the population in rural areas (Melkote 1991: 218). They also point out the inability of the literate mode of communication to bridge the gap between literate and non-literate societies (Goody & Watt 1963: 336). This aspect has important implications for the provision of information that originates outside the indigenous knowledge system and that could contribute to rural development.

Walter Ong (1982) explored the intellectual, literacy and social effects of writing, as well as of print and electronic technology. Although reading and writing play an insignificant role in rural people's use of information, his contribution on how rural people handle information and what mechanisms they put in place to exchange information is relevant. Ong's description of how information is concretised, stored, interpreted and communicated in an oral culture is quite illuminating and serves as a standard of comparison with the developer's approach. The views of Botha (1991) contribute to an understanding of the impact of orality and literacy in a heterogeneous society. He points out that cross-cultural communication can be immensely enriched by orality-literacy studies. Olson (1994) also reflects on the difference between oral and literate societies when it comes to the interpretation of meaning and the impact of judgement of authoritative figures. The views of Goody and Watt (1963), Ong (1982), Botha (1991) and Olson (1994) helped to create a picture of how people from oral cultures collect, store and communicate information.

Given the differences in information handling between literate and non-literate societies, it is not surprising that the providers of information to rural communities face so many obstacles in bridging the gap between the developed world

and developing societies. Havelock, who developed the well-known interactive communication model, depicts the information environments of the senders and users of information as two resource systems where the boundaries of these two systems act as barriers which either let information through or restrict its flow (Havelock 1986, 220). This model served as a point of departure for identifying variables within the respective environments of developers and small-scale farmers in rural areas that could impact on the provision of information.

Some work has been carried out on rural development and the issue of literacy to gain an understanding of how non-literate people should be introduced to outside information. Rogers (1992) discusses the role of adult education and the training of non-literates in development projects. He emphasises the importance of deliberate intervention in development (introduction of information through training) where there is a lack of the understanding required to change for the better. His views on rural people's norms, values, beliefs, their perceptions of needs, wants and expectations, and the impact of development approaches on their world view provide valuable insights into the manner in which information provision should be approached. Relevant to information provision is Rogers' view on the importance of participation of the target groups in development programmes, and approaches currently followed to ensure the effective adoption of development programmes. His strategy known as the "route to change" (Rogers 1992: 119) serves as an example of how information provision could be effectively planned and managed in development programmes.

### *Information provision through development programmes*

The Phokoane case refers to a development programme used to train small-scale farmers in effective maize production. The initial successes of the training programme (dubbed the Phokoane case) drew much local attention among agro-economists. Surveys were conducted and reported. The Development Bank of Southern Africa (DBSA) provided funds for the establishment of a farmer support programme implemented by the Lebowa Agricultural Corporation (LAC) (Kirsten,

Sartorius von Bach & Van Zyl 1995). Of interest to this discussion is the manner in which information was provided through the training of non-literate adults that resulted in effective maize production and attendant economic success.

From an information science point of view, the question arises why this specific training programme was so successful, while others implemented at that time were less effective if not wholly unsuccessful. What role did information provision play in the training programme? In order to find out the original training programme was analysed by comparing it with the literature from various disciplines which reported on information transfer, information behaviour of user groups in rural communities, the perception of outside information in rural areas, media and channels used in the information transfer process, as well as the impact of literacy and orality among people in rural communities. The literature was also scrutinised for evidence of the impact of modern information systems as well as indigenous knowledge systems on rural people's information behaviour.

Investigation of the Phokoane case revealed that approximately one-third of the population practised some form of farming. Typically the size of the average farm in the Phokoane area ranged between 0,5 and 2 ha plots of arable land (Bembridge 1987). The target group comprised mostly elderly people, women and children who were very poor, and often went without a daily meal. The initial success of the first participants gave rise to an unexpected demand from neighbours who also wanted to be trained. In the space of five years, the programme that started out with eight volunteers grew to a corps of about 3430 small-scale farmers in and around Phokoane (Adendorf 1991). The success of the training programme resulted in its adoption by the Lebowa Agricultural Corporation (LAC) of that time, which introduced it to other groups of small-scale farmers under its jurisdiction.

Although the initial training programme was not aimed at information provision as such, a thorough analysis showed how the developer of the programme skilfully integrated knowledge of the participant group's social and cultural environment, management functions and the different types of factual information needed for maize production. It was clear from the investigation

that the participants originated from an oral culture where anything they needed to know was communicated orally. Every little bit of information they obtained could be stored only in memory and was communicated to other members of the community by word of mouth, which included: general conversation, storytelling, acting, dancing, demonstrations et cetera.

The trainer's initial survey revealed that the farmers knew the traditional way of growing maize, but lacked basic knowledge of additional issues needed for a successful harvest such as planning, soil preparation, weeding, fertilisers and pest control, and taking responsibility for oneself. The initial survey also revealed that the farmers were full of distrust towards outsiders, and they were unfamiliar with modern farming practices.

From the point of view of information provision, these attitudes act as unknown variables that could constrict adoption and thus prevent information crossing the boundaries between the developed world and rural communities. The trainer's very first move therefore was to make contact with the first eight participants, who were willing to listen to him. He had to build up relationships of trust with them before he could think of introducing his plan of effective maize production at a level they could understand. By being completely honest with them, assuring them that he would not take their land and sympathising with their circumstances, he built the platform of his training programme (Adendorf 1991).

Analysing the trainer's approach as recorded in his manual, it became evident that the oral culture has a stronger impact on the information behaviour of rural people than researchers on development issues would have liked to admit. How this impact was addressed to avoid pitfalls is reflected in the manner in which this particular training programme was implemented.

Outstanding features of the training programme included:

- a strategy that ensured an orderly flow of information where one phase of the programme built on information obtained from a previous phase
- training techniques devised to transfer information originating from the developed world to a group of people familiar only with the traditional way of life
- supportive tactics to address the hidden factors such as distrust and aggression which could prevent the adoption of newly introduced information

A more detailed interpretation of the above-mentioned features is presented below to show their importance for information provision to rural communities.

### *Planning an information transfer strategy*

In view of the present state of the participant group there were three important issues at stake. Firstly, new ideas about maize production could not be introduced without training. Secondly, appropriate transfer techniques the group could relate to had to be used in order to communicate at their level of understanding. Thirdly, the presence of aggression, distrust and lack of motivation were unknown variables that could prevent adoption of outside information. Supportive tactics were needed to get the training programme off the ground. From an information provision point of view all these indicate that the transfer of information was more than merely imparting facts on maize production. It also required a fair amount of information management and coordination of information activities for a particular situation.

The successive lectures on the introduction of the maize plant, soil cultivation, fertilisation, weed control, establishing a maize crop, after-care of the maize crop, harvesting, etc. are evidence of good planning. So is the presentation of the lectures that coincided with the climatic seasons. The participants received the new information at a time when it mattered. Each lecture was also followed up with field visits where the participants experienced the information (or its impact) in practice. This also ensured better memorisation of newly received information.

### *Types of information*

With regard to the provision of different types of information, the trainer had to consider what types of information on maize production were required and how and when to integrate them meaningfully into the training programme. The farmers needed to know something about the soil, the climate, when to start planting, something about the weeds and pests that could destroy their crops, how to arrange for ploughing when the time came, and how to arrange timeously for fertiliser or weed control and pesticides, or for bags at harvest time. Further, they needed

to understand how to arrange for loans, how loans work and their responsibility for repaying the loans. They also needed to know about arrangements with the roller mills where they could deliver their harvest in return for maize meal, and so on. It is evident that they also needed information about related issues apart from the actual facts on growing maize.

The trainer's theoretical training section was the core of the transfer process where factual information from the developed world was introduced to the small-scale farmers. Since the latter were not familiar with the environment from which the information originated (Shields & Servaes 1989), extreme care had to be taken to ensure that the information was offered at a level that they could understand and accept.

### *Training techniques*

Since most of the participants were illiterate, it was important to make each lecture interesting and memorable in some way. It was necessary to hold their attention throughout a lecture. Incidentally, all the lecturing aids the trainer chose to make his lectures interesting turned out to be the very means by which information is transferred or memorised in a traditional oral culture. These included the use of metaphors, storytelling, demonstrations and repetition, as indicated below.

#### *Metaphors*

In order to introduce new concepts on maize production and also to get the group's attention, the trainer referred to the maize plant as a *musadi* – a woman. He knew that a woman is highly regarded among many people in traditional cultures. Once the concept had been accepted he could go on to explain that as the woman cares for her family and provides for their daily needs, so the maize plant would provide for the needs of the farmers.

#### *Storytelling*

Storytelling is used in oral cultures to support memory through association. The trainer used storytelling to explain the invasion of witch weed in a maize field. The maize field was introduced

as a kraal with goats and the witch weed was the lion that sneaked up on the goats. Unwittingly the trainer touched on a well-known attribute of orality – that is, people of the oral tradition can listen attentively and they have very sharp memories (FAO 1987; Olson 1994). This was proved in the Phokoane case where the group responded positively afterwards by caring in good time for their maize fields to prevent the invasion of witch weed.

#### *Demonstrations*

In oral traditions demonstrations play an important role in the memorising and concretising of new concepts (Ong 1982). The trainer used old plastic containers to represent maize fields – one for a maize field that had been incorrectly ploughed and one for a field that had been ploughed deep enough. Another container represented a cloud from which rain was falling. With these containers the trainer demonstrated how a field that had been correctly ploughed absorbed all the water, while the incorrectly ploughed field could absorb only part of the precipitation. The rest was wasted. Demonstrations had a lasting effect on the participants, because they not only heard, but also could actually observe what was happening. This enabled them to understand and memorise the consequences of a maize field being incorrectly ploughed.

#### *Repetition*

Repetition was used to emphasise important issues, such as when to plough, when to fertilise, how to look out for signs of stalk borer worms, how deep to plant or how far apart to put seeds into the ground. Repetition in the oral tradition is used to support the memory since the receiver cannot fall back on written notes (Olson 1994). This technique worked well because non-literate people are well known for their sharp memories, as indicated earlier.

#### *Supportive tactics*

Although the trainer succeeded in using techniques typical of an oral culture, his efforts would have been less successful if he had not addressed

many of the underlying factors identified in the beginning, such as distrust, lack of self-reliance, indifference towards time and a poor self-image. In addition to the transfer techniques he also used supportive tactics to combat negative effects that could retard the transfer process or prevent the farmers from implementing the newly learned maize production practices. These supportive tactics, inter alia, are listed below.

#### *Planning and coordination of support services*

Apart from the lectures it was of the utmost importance that support services, about which the farmers had been taught, should be in place. For example: at the time of ploughing, the tractor services had to be in place and in good running order. Seed, fertiliser and so on had to be available at the cooperative when the planting season came, and enough bags had to be provided at harvest time. Without these support services in place the whole effort of training would have been in vain and the farmers would have become disillusioned. This proves that planning and management are imperative for information provision through development programmes.

#### *Use of group dynamics*

Being aware of the fact that participants were used to the tradition of depending on the view of the group, the trainer built group dynamics into his training programme. He considered it important that the farmers should be involved in the planning of their own training. Group dynamics was also used to manage day-to-day activities among the different groups, such as arrangements for meetings, venues et cetera – also to resolve disputes among members of the groups. Acknowledgement of the participants in this way contributed to the trainer's credibility and the acceptance of his messages.

#### *Trust building*

The trainer emphasised from time to time that he was not there to take their land, that he understood their circumstances and that he only wanted to show them how they could grow maize to ensure that there was enough food for a daily meal until the next harvest. He always ac-

knowledged their cultural norms and values as far as was practicable. He built in incentives to encourage them to follow through what they had started.

#### *Thorough preparation of lectures*

The trainer followed a step-by-step approach: small steps were taken at a time in view of the participants' memory capacity. Only information needed for their particular purpose was provided. At this stage it was decided when to use parables, acting or demonstrations to make the information more meaningful and memorable at a level understood by the farmers. Using the wrong technique could have been detrimental.

#### *Provision of additional information*

Sometimes it was necessary to provide information on related matters such as loans to buy seed and fertiliser, or to pay for ploughing services. The target group was not familiar with the practice of paying interest on money borrowed to obtain the necessary inputs. This was done to prevent a situation where information on maize production was accepted, but then not implemented because of ignorance about financial matters.

#### *Maize growing cycle*

Lectures were structured and presented to follow the maize growing cycle. Thus, information provision coincided with practical conditions. In this way the information had more meaning and greater impact at the moment it was needed.

#### *Discipline*

A sense of time and awareness of the need for orderliness were also built into the lectures. The farmers learned to commit themselves and attend meetings at set times in order not to miss out on information provided in consecutive lectures. In this way they learnt to take responsibility for themselves. They also learnt to implement information when necessary to prevent crop losses of their own making. In this way they learnt that to a certain extent they held the success of their farming efforts in their own hands.

### *Language*

The particular language understood by the participants was deemed very important. Care was taken to use terminology in the language the group was used to. During meetings an interpreter was used to ensure that the participants understood all the facts correctly and did not lose interest as a result of being uncertain of the exact meaning of words.

### *Boundary crossing*

Investigation of the Phokoane case proved that the training of non-literate adults in a rural community depends largely on the exchange of information originating from both the modern information resource system and the indigenous knowledge system.

On the one hand there were small-scale farmers who possessed indigenous knowledge regarding maize production that proved to be ineffective under current conditions. On the other hand the trainer depended on the vast store of information from the developed world regarding maize production. This information could improve the situation in the developing community provided that the information was introduced at a level small-scale farmers could understand and in a format they could access. Unless the information content is adapted and repackaged for a specific situation the two resource systems are equally incompetent to provide for the information needs of small-scale farmers.

With regard to information provision, we encountered a situation where the small-scale farmers were exposed to two different information resource systems which are not compatible. The one provides information in a manner understood by the farmers, but the content is inappropriate for solving a particular problem. The other system may have technologically advanced information that may solve the problem, but the content is packaged in a format and on a level which makes it inaccessible to the farmers, because they lack understanding or have no background relevant to the outside information.

The mechanisms applied by the trainer at Phokoane made the two systems more compatible. He did this by using communication mechanisms well known among people used to the oral tradition. These include: informal face-to-face

conversations, storytelling, acting, dancing, demonstrations, repetition to aid memorisation, and metaphors to compare new facts to some element of existing knowledge. By applying these mechanisms, the trainer succeeded in bringing information from the modern resource system to a level the small-scale farmers could understand and relate to. Where possible he drew on information from the indigenous knowledge system they were used to. All these techniques resulted in the merging of the two systems to provide appropriate information to this particular user group. The principles on which the strategy he used is based are also applicable to other types of target groups in rural communities which originate from the oral tradition.

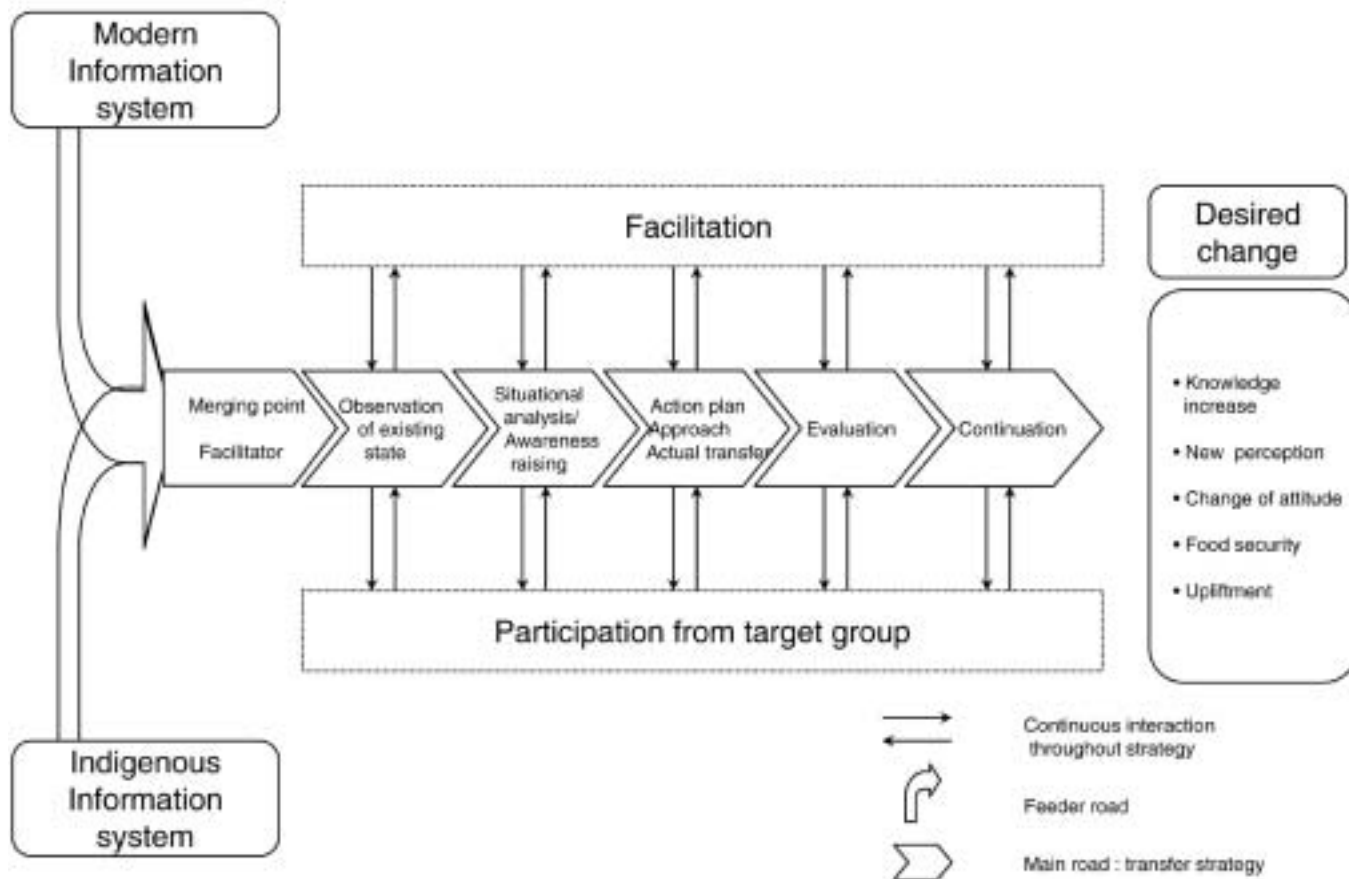
The outcome of the investigation proved how knowledge of the information users' cultural environment, information behaviour, information handling skills, good planning and trust building helps to cross the boundaries between the information resource system of modern society and users in rural communities used to the indigenous knowledge system and its communication mechanisms.

### *Developing a new model*

Investigation of the Phokoane case yielded insights which formed the basis of the idea that by using communication mechanisms the receiver group is familiar with and using basic knowledge (e.g. of maize growing) from the indigenous knowledge system, it will be possible to add outside information to what rural people already know. In this way information from the developed world can cross the boundaries of the information systems operational in the developing world. In other words, by involving target groups from developing communities, as well as using communication mechanisms they are familiar with, it should be possible to transfer information more effectively from the developed world to people in rural communities.

In order to visualise this boundary crossing, the Merger Model (Meyer 2000) was developed. It shows how information from both the modern information resource system and the indigenous knowledge system can be merged to serve users in rural communities best. The model depicted in *Figure 1* is discussed below.

Figure 1: Merger model: information transfer to rural communities



Looking at the model in Figure 1, one can visualise the transfer process for rural communities as two feeder roads coming from the two different resource systems, which then merge to become the main road. The main road carries the required information to the target groups where it is applied according to the consecutive steps of the transfer strategy. Since the boundary crossing takes place between an information resource system based on literacy and a system based on the oral culture, human intervention (an intermediary or facilitator) is necessary to translate the messages for the users by way of activities comprising the main road. The two-way arrows on the main road indicate that there should be continuous interaction between the intermediary or facilitator and the target group. This forms the basis for a model of the information transfer process to rural communities.

Considering the fact that the communication mechanisms of the indigenous knowledge system require human involvement, it seems natural that the presence of an intermediary will always be

required for information provision through development projects.

For the implementation of development projects, this model will be of importance at the interface between the development agent and the target group at grassroots level. This is the level where the field workers of the different development agencies operate. They are responsible for information provision at grassroots level and should be equipped with appropriate knowledge and information handling skills to ensure adoption and implementation of new practices.

### Conclusion

The in-depth investigation of the Phokoane case showed the extent to which information provision takes place through development projects. Results of the Phokoane training programme also proved the value of information as a resource for development, and that it can contribute to the improvement of people's quality of life.

The training programme turned out to be a practical example of how boundaries between two rather incompatible information resource systems can be crossed successfully. Utilisation of communication mechanisms inherent in the indigenous knowledge system becomes imperative for the translation of outside information to rural communities where the oral tradition still prevails. The transfer techniques used in the training programme proved to be communication mechanisms of the indigenous knowledge system which are naturally used by rural people. The manner in which the transfer mechanisms were applied proved that knowledge of the target group's information behaviour and knowledge of their understanding of problems are imperative for developers if they are to avoid pitfalls when devising strategies for the transfer of outside information.

The use of supportive tactics proved that information provision is not a mere passing on of factual information. Involvement of the target group, consideration of local conditions and thorough planning and coordination of different activities are required to add value to the process of information provision to ensure that information is adopted and implemented.

Since developers are in a prime position to provide information to rural communities through their development projects, it would be to their advantage to make use of the inputs that information science can offer regarding information as a resource for development, information behaviour of rural people and information handling skills and planning in general. It is believed that this type of know-how can contribute to a higher success rate of development projects, provided that field workers operating at grassroots level are trained efficiently in information provision to rural people.

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