

**INSTRUCTIONAL MEDIA DEVELOPMENT FOR NONFORMAL DISTANCE LEARNING:
FACTORS AFFECTING THE ADOPTION OF FARMING MESSAGES BY POOR RURAL MEN
AND WOMEN FARMERS.**

Presented at the
Fifth Pan Commonwealth Forum on Open Learning (PCF5)
Commonwealth of Learning
University of London

13th to 17th July 2008

by

Ngechu, Mary, University of Nairobi.
mngechu@uonbi.ac.ke
ngechuw@wananchi.com
Radio lecturer and Chairperson,
Department of Distance Studies,
School of Continuing and Distance Education,
College of Education and External Studies,
P.O. Box 30197, City Square, 00100
Mobile Tel 0722 375 272

Abstract

INSTRUCTIONAL MEDIA DEVELOPMENT FOR NON-FORMAL DISTANCE LEARNING: FACTORS AFFECTING THE ADOPTION OF FARMING MESSAGES BY POOR RURAL MEN AND WOMEN FARMERS.

Ms Mary Ngechu, Chairperson, Department of Distance Studies, School of Continuing and Distance Education, College of Education and External Studies, University of Nairobi

The constructive and transformative schools of learning have suggested that behaviour change is due to among other factors situated learning. A distance learning course team tested this idea over a long period of time from 1989 to 2004. The membership of the course team consisted of a radio broadcaster (the main researcher) crop and animal researchers, radio listening groups (RLG), poor women and men farmers, village chiefs and local extension officers.

This study aimed at assessing and identifying factors that may affect farmers' adoption of agricultural and health knowledge and skills. To be able to do that, poor women and men farmers were organised in radio listening groups. The farmers groups conducted situational analysis: and documented in audiocassettes their knowledge, skills and issues; with crop growing and keeping animals, health and nutrition; that they were experiencing and which new knowledge could help to solve.

This documentation was transcribed, and disseminated to research scientists who were conducting research in agriculture, animal production, health and nutrition. The scientists answered farmers by writing papers on each issue that was raised. The knowledge papers were used to script radio programmes which were recorded and transmitted by the national broadcasting corporation at a time chosen by farmers which was synchronous distance education.

Radio Listening Groups received and discussed information contained in radio broadcasts, audiocassettes, booklets (written in local languages), and themselves. During group discussions, each individual farmer decided which messages to adapt, adopt and reject. This decision was recorded, transcribed and discussed by scientists and a few farmers groups. The farmers listening groups and radio forums had been tested in Canada, Ghana, India and many other countries and had succeeded as forums for information dissemination. This study extended the idea by testing information sources and their viability.

The hypothesis was that if the information in the radio programme was useful to the farmer, he or she shall adopt and implement the idea and skill. The second hypothesis was that if one group member adopted an idea, and the innovation worked, then other members would also adopt that successful idea and innovation.

Thus after the broadcast, the radio producer, research scientists and group members visited members who adopted the ideas from the radio and listening groups. The purpose was to observe the adoption and change in farming method. During the visit, the member was asked to describe the idea he or she had adopted and to explain the reasons for the adoption. The members who had not adopted the idea gave reasons for rejecting the idea. Group members and the research team recorded the group conversation in local language in audio and videocassettes. The recordings were transcribed by the research team; organised in script form and in book form by the radio producer. The radio script and booklet were reviewed by the content experts for accuracy of the information and radio listening groups for simplicity of language and cultural relevance. The radio programmes and booklets were pre-tested before broadcasting and printing. The radio programmes were evaluated using a second by second time scaling method by Professor Jon Baggerly, of Concordia University.

From the regular field observations and voices of poor rural women and men farmers, factors that determined adoption and rejection of farming and health messages were noted. This paper shall explain this natural non-formal distance learning study whose media materials and knowledge output are still currently being used and influencing farming practices in East Africa and other countries.

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Background Information

Studies by Belenky (1986) of young and older American women attending colleges and universities found that women students could be grouped into four categories. One is the category of the "silent woman" who has been conditioned to obey authorities without questioning them. Two, is the women who believes in her subjective knowledge. Three is the woman who relies on outside knowledge i.e. procedural knowledge from the lecturers and other authorities. Four is the transformed woman who receives procedural knowledge, and incorporates or integrates it into her subjective knowledge to construct new knowledge as she converses and reflects on her experiences as well as those of other women. Our target audience were poor women and men and belonged to these four categories.

The poor men farmers on the other hand, belong to the group of people who believe in subjective knowledge. In my language, for example, men are called "imenyi" which means the "knowers" of everything. This belief continues to exist amongst the poor men farmers in the community. These farmers refuse to relate their poverty to their failure to listen, to receive and learn from procedural knowledge emanating from other farmers, agricultural extension officers and scientists.

The need

Both poor men and women farmers identified lack of instructional media as their greatest need.

Justification

Studies in community media have shown that top down communication methods, which are based on theories of the "outdated" dominant paradigm, are ineffective in any education process, where knowledge, skills, practises and values are exchanged. Hence the need for participatory instructional media development process is imperative.

Theoretical framework

Constructive and transformative theories of learning suggest that behaviour change is due to situated and experiential learning.

Study

The study aimed at establishing factors affecting adoption of farming and nutrition messages by poor rural men and women farmers

Findings

The management of the implementation process was critical especially flexibility of the instructional media development process to allow for participatory space and inputs by research scientist, farmers, media writers and other stakeholders.

Factor one. Initiating and Organizing Radio Listening Groups

Farmers are intelligent in spite of their illiteracy. They accepted that *without literacy in agriculture*, their farming output was not productive due to lack of agricultural education and extension communications. When the concept of forming radio listening groups (RLGs) was proposed, farmers welcomed it because they were neglected by existing extension services because of their poverty situations. The concept of forming open learning groups or radio listening groups was

exciting to lecturers and research scientists who had proven innovations and were looking for means of their dissemination.

RLG targeted farmers who were not members of other groups. Majority were resource poor farmers with smallholdings. They supplemented farming products by selling labour and hiring land to grow more food for family consumption and sale. These farmers were willing not only to organize, lead and attend RLGs but also to receive innovations to meet emerging farming and nutrition needs. Their enthusiasm attracted local administrators, adult teachers, extension workers, nurses, youth and older adults. They incorporated local extension officers in RLGs. This was important because local extension officers acted as facilitators and provided critical learner support services. Group members participated actively and took leadership very seriously. Farmers' willingness to attend meetings regularly and lead groups was important because it was not possible to employ local facilitators.

Assumptions

The assumption was that procedural knowledge emanating from research scientist combined with subjective knowledge from farmers could improve farming if poor farmers had access to it (as in a pub which is open to all). Thus, it was assumed that use of information and skills emanating from local farmers, extension officers and research scientists could transform agricultural and health practices. This transformation would be observable. A second assumption was that poor farmers would attend organised open learning forums to listen to messages if they had identified them and even recorded them as audio and print messages. A third assumption was that if farmers who occupy the lower socio-economic strata became members of RLG; they would benefit by combining new ideas with their subjective knowledge to develop strategies for poverty alleviation, women empowerment, community development, and improve their know-how in health, nutrition, and food security, production and marketing.

These assumptions were based on the traditional view that expert knowledge and skills might improve farmer's food growing and animal keeping practices and subsequent output. This was to be evident when marginalized poor smallholder farmers constituted learning groups, which were to be forums for adoption of new skills and ideas to improve their social, economic and political status. Adoption of ideas would change community attitude towards open learning; an important factor in groups sustenance. If this were to happen, RLGs would serve as open learning models and mechanisms for improvement of the status of resource poor women farmers. It was assumed that this would not happen if members of RLGs were the progressive smallholder farmers. With these assumptions, RLGs were formed and group leaders elected.

Selection of Channels and Timing

The main delivery channels were identified before the beginning of instructional media development process. Farmers identified radio as the best medium augmented by audiocassettes and booklets. This was because illiterate farmers could learn by listening to vernacular radio and audiocassettes programmes. They decided who was to keep radio set, batteries, audiocassettes, microphone and places to hold before broadcast discussions. They selected radio listening session as every Wednesday from 14.00. to 15.00 hours. Radio broadcasting was from 14.45. to 15.00 hours. During the formative period, the radio programmes were aired for fifteen minutes. And because the lessons were synchronous, they made timing policies to ensure that members were punctual and there was neither lateness nor dropouts. Late members were fined for time wasting. After developing 50 programmes, they were repeated for mass reception after news from 19.30 to 20.00 hours. Private sponsors selected this timing.

In built Quality Control Strategies

Concern for quality was central to all activities. There were five quality control strategies. First was identifying instructional designer. This was not a problem since the lead researcher was a

trained distance educator with experience in designing instructional audio programmes and print materials.

Second strategy was instructional media design. The strategy involved:

- ✓ **Conducting needs assessment.** Needs were assessed on a continuous process by RLGs and research team. RLGs assessed and identified issues and factors that hindered adoption of farming and health messages; best times for radio listening, duration of broadcast and following lesson discussions. Research scientists visited holdings to observe farm level practices and converse with farmers to assess gaps, different perspectives and experiences with problems. Needs assessment by target audience and scientists is a critical quality control strategy when developing instructional media for nonformal open learning.
- ✓ **Identifying topics.** From issues, RLGs identified specific topics that they wanted to learn. These topics constituted the RLG curriculum, which guided instructional media production team. Curriculum content ranged from crop growing, animal husbandry, health, socialisation, business, family life, gender issues, leadership, community development and several diseases among others. Their view was that they could learn by themselves simple topics such as harvesting tree seeds and making seedbeds if they had local support services from administrators, knowledgeable farmers and themselves since University was far from them.
- ✓ **Stating topic objectives.** From objectives, RLGs identified tasks, activities, and benefits of group open learning process.
- ✓ **Identifying learning methods.** RLGs suggested how to learn, where, when, and who was to teach. In groups, they used Socratic technique of posing questions.
- ✓ **Identifying metacognitive media skills.** Groups identified literacy and media abilities. These were abilities needed to read written communications from the university; record on air broadcasts using microphones and radio cassette recorder, switch on and off, write replies, and read booklets among others.
- ✓ **Recording activities.** Each meeting raised questions and issues. These group discussions were recorded. These recordings contained discussions and talks given by farmers and visitors on topics judged as simple by RLGs. Complex topics that local extension staff could not solve/answer were sent to the University team. All RLG recordings were transcribed and disseminated to university scientists.
- ✓ **Course team approach.** This approach ensured that instructional media products were acceptable to users. Key course team members were content writers and reviewers who were researching in farming and animal production areas. These members had expertise in different content areas. Their role was to listen to audio recordings, read letters, visit farms, observe practices, listen to multiple perspectives, hold open forum discussions, and assess RLG needs that could be met by their research findings. If they did not have answers, scientists looked for answers. Answers were in form of scientific papers; which were peer reviewed. Peer review of expert papers was critical in terms of disseminating proven agricultural and health content.

Third quality control strategy was **intensive training**. A lot of time was spent training participants in all aspects of open learning.

- ✓ Research assistants and scientists were trained in participatory research methods and instructional media development. Scientists learnt how to communicate using simple, ordinary language. They learnt how to listen actively, speak less and dialogue on an

equal basis with RLGs. They learnt how to accept feedback and criticism that was contrarily to their belief system and findings because farmers are practising scientists with proven experiences.

- ✓ Group leaders and members were trained on how to conduct needs assessment, group management, monitoring, and evaluation. They learnt how to: identify group objectives, tasks, roles and abilities, organise listening sessions, listen to radio programmes, record off air broadcasts and discussions, read booklets, conduct demonstrations, and probe for members' expectations. They learnt through how to assess and identify real group needs, meet those that they could by face-to-face talks, conversations and demonstrations and forward to the university the needs that they were unable to meet. They learnt how to cooperate and collaborate when learning to ensure that no, member was left behind by others.

These were important quality control strategies hardly done in open learning. We assume that we need training but learners do not. We assume they know how to use instructional media. This assumption has led to failure of instructional media strategies. It is therefore imperative that developers of instructional media train users on learning from them in open learning context.

- ✓ Scientists were trained to think in Kiswahili and Kikuyu languages. This training gave scientist skills in writing simple messages. The reason was to avoid distorted messages and change of meanings during translations process. They wrote scientific papers, radio scripts and booklets in English, Kiswahili or Kikuyu language as required by RLG readers and listeners. This was to ensure that the messages were correctly communicated and received by distance learners as intended. If scientists were not able to write in local languages, scientific translators were incorporated to work with them to translate scripts.
- ✓ Most scientists could not think in local languages. Hence media producers were trained in designing, writing and editing radio programmes, audiocassettes and booklets. These three products were based on scientific papers, scripts and farmers' audio recordings. Graphic designers illustrated booklets.
- ✓ Comedy artists trained the instructional media team consisting of content experts, radio producer, scriptwriters, and presenters in reality characterisation and dramatisation. It was realised that open learning must maintain learners' interest. Farmers must enjoy themselves as well as learn.

Factor two. Production of Quality Instructional Media

Radio programmes

Fourth strategy was the lead researcher who was a radio producer. The person trained the first group of scriptwriters, presenters, three leaders from each radio listening groups, research assistants and local administrators. Those who were trained became trainers of others. Each one trained was expected to train another person or group. The work of the radio producer became that of quality control and leadership of the research process. About 300 radio programmes, 50 audiocassettes and 120 booklets on tropical farming and health were produced.

Audiocassettes.

The audiocassettes were first produced as radio programmes then copied as audiocassettes. Sometimes farmers' recordings were edited and produced as radio programmes and

audiocassettes. The private sector with capacities for mass duplication, and labelling, were used to produce audiocassettes.

Booklets

Peer reviewed scientific papers, radio programmes and audiocassettes were used to produce small A5 booklets in three languages: Kikuyu, Kiswahili and English. The most popular are English booklets in spite of the illiteracy.

Factor three. Pre-testing

Fifth quality control strategy was pre-testing prototype instructional media. When instructional media were developed, pre-testing with different sample of the target audience was carried out to ensure appeal to diverse distance learners and hence achieve universality. Radio programmes were pre- tested using time scaling method. With this method, farmers assessed five radio programmes as they listened to them. Pre-testing findings were shared amongst stakeholders. Pre testing revealed acceptable radio formats, sound effects and voices to transmit shared knowledge and practices. Popular instructional messages formats were recommended for use. Pre-test findings were used to revise radio programmes until the learners; communication experts and scientists were satisfied. This process was followed during the production of all the instructional media.

Distribution

Once the proto type instructional media were approved; by user farmers and content experts, University looked for sponsors of airtime, printers and providers of learner support services. These distributors became quality controllers. Broadcasting by national services was very expensive. The radio producer had to find sponsors before embarking on full-scale radio production and printing. Assistance came from advertising companies who found sponsors of airtime and printing. These were manufacturers of household products like soap and cooking fat. To avoid conflict of interests, companies that sold seeds and fertilisers were not allowed to sponsor airtime.

The distributors controlled quality. The national broadcasting service checked quality of radio programmes before broadcasting. Media researchers monitored listeners per programme and per region. The advertiser used monitoring data to find airtime sponsors from different companies. Although University was paying for high quality printing services, printer's conscious of their brand name, demanded high quality camera ready work manuscripts with illustrations and photographs. The radio producer looked for bookshops willing to display and distribute booklets to all farmers

The fifth team were sellers of support services for mass production. These were the printers of booklets, copiers of audiocassettes and bookshops who were the surface distributors of booklets and audiocassettes to all willing learners. Here agro companies that sold chicks and farm animals were allowed to print booklets and audiocassettes, which they distributed free to their customers.

Radio broadcasts.

Elected leaders became facilitators, surrogate distance educators and site managers. Their major role was to ensure that members were given facilitation roles according to their abilities. This meant that RLGs decided persons to record minutes and share practices every Wednesday. Before broadcast, group leader inserted audiocassette, which was distributed before broadcast because sometimes radio signal was weak. Members shared their knowledge of the lesson topic. This knowledge was recorded. During radio broadcast, members listened attentively. No noise was allowed.

Factor four. Audiocassettes and booklets.

Sometimes farmers wanted to listen to audiocassettes or read booklets. They felt that both asynchronous and synchronous delivery systems had advantages for example radio programmes used less batteries than audiocassettes replays. After listening or reading, group discussions based on instructional medium used were held. Each individual farmer decided which messages to adapt, adopt and reject. Members discussed these decisions. The discussions were lively as members challenged individual decisions. If scientist were present, discussions, questions and answers were witnessed by the research assistants and media producers. These sessions were recorded in minutes, and audiocassettes. They were posted/hand delivered to the University of Nairobi. Here they were transcribed and information used to write scripts, and booklets.

Factor five. Group Learning.

Radio listening groups, learnt from each other following the adult education philosophy of each one, teach one. Although this was not planned, the process empowered groups and they disseminated RLG methodology to non-members. Distance learners' especially women realised that they had a lot of information amongst themselves, which was new to some members. They loved supporting each other in areas where a member did not understand. More importantly, group members valued this information and because it was situated and was based on their proven experiences. It was readily accepted, used and taught to other farmers in public meetings and at farm level demonstrations. The subjects took away the project from the University. They called face-to-face dissemination meetings, which were attended by local administrators, neighbours, private and public officers. In these meetings, they disseminated radio messages that they had adopted. This led to fast dissemination of messages from the original groups to very many villages and the entire country. The research project lost control, which was an indicator of success since RLGs belonged to farmers. The University became a producer of knowledge and farmers took over the role of mobilisation and social marketing of adoptable ideas.

Factor Six. Monitoring and Evaluation

All project participants: groups, scientists, research assistants, national broadcasting service, advertisers, sponsors and producers of instructional media monitored and evaluated all activities because they were inbuilt. Evaluation in particular focused on indicators of change. Were farming behaviours changed? What about fulfilment of expectations, tasks, and objectives? The distance learners made judgements in terms of best medium for open learning and the extent to which the instructional media achieved its objectives. From discussions with farmers and evidence in their farms and households, instructional media enabled them to share knowledge not only amongst themselves but also with research scientists, extension officers and local administrators. They became constructors of transforming knowledge, attitudes and skills

Summary and conclusion

The process of implementation was challenging. One was emergence of unplanned activities such as farmer-to-farmer extension of RLGs, audiocassettes and messages. Second was fulfilling philosophy of RLGs, which was meeting skills and knowledge demands. Third was process of developing instructional messages based on identification and prioritised needs of RLGs.

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Bell laboratories for Shannon's paper

Lucent technologies

Commonwealth of Learning

APPENDIX ONE

English	Translated to Kiswahili	Translated to Kikuyu
1. Rearing dairy goats	Ukulima wa mbuzi wa maziwa	Uriithi wa mburi cia iria
2. Rearing dairy cows	Ufugaji wa ng'ombe wa maziwa	Uriithi wa ng'ombe
3. Rearing chicken layers	Ufugaji wa kuku wa mayai	Ureri wa nguku cia kurekaia
4. Rearing chicken broilers	Ufugaji kuku wa nyama	Ureri wa nguku cia nyama
5. Rearing of pigs	Ufugaji wa nguruwe	Uriithi wa nguruwe
6. Common poultry diseases	Magonjwa ya kuku	Mirimu ya nguku
7. Growing carrots	Ukuzaji wa karoti	Ukuria wa karati
8. Growing kales	Ukuzaji wa sukuma wiki	Ukuria wa thukuma
9. Growing onions	Ukuzaji wa vitunguu	Ukuria wa ltunguru
10. Growing pumpkin	Ukuzaji wa malenge	Ukuria wa marenge
11. Growing bananas	Ukuzaji wa ndizi	Ukuria wa marigu
12. Growing sweet potatoes	Ukuzaji wa viazi vitamu	Ukuria wa ngwaci
13. Growing arrowroots	Ukuzaji wa wanga	Ukuria wa nduma
14. Growing coriander	Ukuzaji wa ndania	Ukuria wa ndania
15. Growing cowpeas	Ukuzaji wa kunde	Ukuria wa thoroko
16. Growing amaranthus	Ukuzaji wa terere	Ukuria wa terere
17. Growing millet	Ukuzaji wa mawele	Ukuria wa muhia
18. Growing sorghum	Ukuzaji wa mtama	Ukuria wa muere
19. Growing wheat	Ukuzaji wa ngano	Ukuria wa ngano
20. Growing green grams	Ukuzaji wa ndengu	Ukuria wa ndengu
21. Growing cabbages	Ukuzaji wa mboga	Ukuria wa mboga
22. Growing maize	Ukuzaji wa mahindi	Ukuria wa mbembe
23. Growing beans	Ukuzaji wa maharagwe	Ukuria wa mboco
24. Growing potatoes	Ukuzaji wa viazi	Ukuria wa waru
25. Growing tomatoes	Ukuzaji wa nyanya	Ukuria wa nyanya
26. Growing yams	Ukuzaji wa viazi vikuu	Ukuria wa ikwa
27. Growing cassava	Ukuzaji wa mihogo	Ukuria wa mwanga
28. Growing Napier grass	Ukuzaji wa napier grass	Ukuria wa Thaara
29. Soil fertility	Jinsi ya kuinua rotuba	Njira cia kumenyerera tiiri
30. Making silage	-	-
31. Tea	Ukuzaji wa Chai	Ukuria wa Machani
32. Coffee	Ukuzaji wa Kahawa	Ukuria wa Kahua
33. Neem Tree	Ukuzaji wa Mwarubaini	Ukuria wa Mwarubaine
34. Strategies of improving soil fertility		
35. Rearing ordinary chicken		
36. farming business		
37. Organizing RLGs		
38. Gender issues in RLGs		
39. Improving women's health		
40. Improving families relations		