A Review of Case Studies Related to Distance Education in Developing Countries

Mengistu Woldehanna*

Introduction

Within a context of rapid technological change and shifting market conditions, the education system of the developing countries is challenged by the need to provide increased educational opportunities without increased budgets.

Many educational institutions are answering this challenge by developing distance education programs. At its most basic level, distance education takes place when a teacher and student(s) are separated by physical distance, and technology (i.e., voice, video, data, and print), often in concert with face-to-face communication, is used to bridge the instructional gap. These types of program can provide adults with a second chance at a college education, reach those disadvantaged by limited time, distance or physical disability, and update the knowledge base of workers at their places of employment. Of course, the reason distance learning is such a hot topic right now is that it provides what training departments are desperate for - cheaper, faster, and sometimes more effective training that can reach a bigger audience.

In this paper an attempt is made to provide an overview of the distance education and cultural and linguistic problems confronting distance education today. The description of overview of the distance education will be followed by presentation of cultural and linguistic problems and their impact on distance education in developing countries.

* Lecturer, Alemaya University.

A Review of Case Studies Related to Distance Education in Developing Countries

Mengistu Woldehanna*

Introduction

Within a context of rapid technological change and shifting market conditions, the education system of the developing countries is challenged by the need to provide increased educational opportunities without increased budgets.

Many educational institutions are answering this challenge by developing distance education programs. At its most basic level, distance education takes place when a teacher and student(s) are separated by physical distance, and technology (i.e., voice, video, data, and print), often in concert with face-to-face communication, is used to bridge the instructional gap. These types of program can provide adults with a second chance at a college education, reach those disadvantaged by limited time, distance or physical disability, and update the knowledge base of workers at their places of employment. Of course, the reason distance learning is such a hot topic right now is that it provides what training departments are desperate for - cheaper, faster, and sometimes more effective training that can reach a bigger audience.

In this paper an attempt is made to provide an overview of the distance education and cultural and linguistic problems confronting distance education today. The description of overview of the distance education will be followed by presentation of cultural and linguistic problems and their impact on distance education in developing countries.

* Lecturer, Alemaya University.

Distance Education: An Overview

Is Distance Education Effective?

Many educators ask if distant students learn as much as students receiving traditional face-to-face instruction. Research comparing distance education to traditional face-to-face instruction indicates that teaching and studying at a distance can be as effective as traditional instruction. This is especially true when the method and technologies used are appropriate to the instructional tasks and when there is student-to-student interaction, timely teacher-to-student feedback (Moore and Thompson, 1990; Verduin and Clark, 1991).

How is Distance Education Delivered?

Wide ranges of technological options are available to the distance educator. They fall into four major categories:

Voice – Instructional audio tools include the interactive technologies of telephone, audio conferencing, and short-wave radio. Passive (i.e, one-way) audio tools include tapes and radio.

Video – Instructional video tools include still images such as slides, pre-produced moving images (e.g., film, videotape), and real-time moving images combined with audio conferencing (one-way or two-way video with two-way audio).

Data - Computers send and receive information electronically. For this reason, the term *data* is used to describe this broad category of instructional tools. Computer applications for distance education are varied and include:

- Computer-assisted instruction (CAI) – uses the computer as a self-contained teaching machine to present individual lessons.

- Computer-managed instruction (CMI) – uses the computer to organize instruction and track student records and progress. The instruction itself need not be delivered via a computer although CAI is often combined with CMI.

- Computer-mediated education (CME) – describes computer applications that facilitate the delivery of instruction. Example include: electronic mail, fax, real-time computer conferencing, and World-Wide Web applications.

Print – is a foundational element of distance education programs and the basis from which all other delivery systems have evolved. Various print formats are available including: textbooks, study guides, workbooks, course syllabi, and case studies.

Which Technology is the Best?

Although technology plays a key role in the delivery of distance education, educators must remain focused on instructional outcomes, not the technology of delivery. The key to effective distance education is focusing on the needs of the learners, the requirements of the content, and the constraints faced by the teacher before selecting a delivery system. Typically, this systematic approach will result in a mix of media, each serving a specific purpose. For example:

- A strong print component can provide much of the basic instructional content in the form of a course text, as well as readings, the syllabus, and day-to-day schedule.

- Interactive audio or video conferencing can provide real time face-to-face (or voice-to-voice) interaction. This is also an excellent and cost-effective way to incorporate guest speakers and content experts.

- Computer conferencing or electronic mail can be used to send messages; assignment feedback, and other targeted communication to one or more class members. It can also be used to increase interaction among students.

- Pre-recorded videotapes can be used to present class lectures and visually oriented content.

- Fax can be used to distribute assignments, last minute announcements; to receive student assignments, and to provide timely feedback.

Using this integrated approach, the educator's task is to carefully select from among the technological options. The goal is to build a mix to instructional media, meeting the needs of the learner in a manner that is instructionally effective and economically prudent.

Summary of Case studies related to Distance Education in Developing Countries

Focus on Formal Education

Evidently, distance teaching for formal education has been the primary focus of many distance education programs in the developing countries. Teacher education or training has remained a center of activity as drive towards universal primary education has accelerated in many places. One of the impressions from reading the case studies is their great variety of structures and formats. Quite a few countries have been found focusing considerably on both the pre-service teacher education or teacher preparation and in-service teacher training programs. Various distance education programs in Kenya, Mauritius, Indonesia and Sri Lanka are examples of in-service teacher education, whereas programs described in case studies related to Zimbabwe and Kenya are examples of teacher preparation. In addition, other projects focus mainly on providing and/or enhancing formal primary and secondary education.

The radio Mathematics Project in Nicaragua, for example, tried to increase achievement in mathematics offered in public primary schools, to provide for easy and wide utilization, and to provide an instructional system acceptable to children, teachers, parents and officials. Similarly, some of the prime objectives of the Ivory Coast Educational Television Project were to achieve better distribution and unification of schooling at the primary level, improve schools throughout, and establish universal primary education in the country by 1985. Another example of distance education used to improve the quality of teaching available is the Radio-Assisted Community Basic Education (RADECO) Project in the Dominican Republic. This Project's three-pronged goal was to develop an effective teaching program at low cost for school-age children, adopt classes for grades one through four for delivery by radio with formal certification for students successfully completing each year, and finally, train Dominicans in all techniques and skills needed to carry out the program. The subject matter of formal distance education programs mostly followed prescribed traditional curriculum and subject areas.

Focus on Non-Formal Education

Distance teaching for non-formal education is another area of activity described by a number of case studies. Distance education programs in Mexico, India, Brazil, and the Ivory Coast are examples that contain activities that aim (partly or wholly) at imparting non-formal education to their participants. The Ivory Coast Television Program, for example, focused on both formal primary education and non-formal education. The secondary objective of the program was to raise political awareness by familiarizing the population with economic, political and administrative structures of the country. As far as Brazil is concerned, it started a massive distance education program after the Ministry of Education promulgated in 1970 a decree requiring all radio and television stations in the country to set aside five hours each week for free educational broadcasting. The free airtime was put to use by transmitting various non-formal educational and cultural programs. One of the basic objects of the Satellite Instructional

Television Experiment (SITE) in India was to undertake instruction in the fields of family planning, agriculture, national integration, and science eg. non-formal science series for children). Another case study concerned with non-formal education is the *Direction General de Education Audiovisual* (*DGEAV*) in *Mexico*, one of the objectives of which was to promote national literacy by using radio and television.

The case studies referred to here focus on both formal and non-formal education in a variety of ways and styles. Quite a few of them deal exclusively with formal education, while others somehow maintain components of both types of education. Overall, distance educational methods have been employed for a wide range of educational and instructional purposes, from primary school to tertiary level, and across almost the full range of subjects and areas.

Pedagogy, Technology Use and Delivery Configurations

Generally speaking, in most of the case studies the pedagogy of distance education did not differ much from the conventional education system. Nor did the curriculum and certification process (where teaching for formal education is concerned). In other words, similar courses and materials were taught or covered. Use of printed materials for correspondence seemed to be the hallmark of study materials almost across the board. In most programs, learners were required to submit their written assignments at fixed intervals to be marked and graded by the instructors. At *Universitas Terbuka* in Indonesia, according to Hallak (1990), printed materials represented 96 percent of the total material that a student received; this was supplemented by material on audio-cassettes (2 percent), television (0.5 percent), radio (0.5 percent), face-to-face tutorials (0.5 percent), and satellite television (0.5 percent). Face-to-face component was considered as obligatory in most programs. For example, the Zimbabwe Integrated National Teachers Education Course (ZINTEC) required reinforcing education at a distance through vacation courses and weekend seminars as examples of emphasis on face-to-face communication.

Traditional pedagogy is followed in all its shapes and configurations in which information or knowledge is transferred from the teacher to students. There is little interaction or convergence that takes place between the instructors and learners. Pedagogical strategies do not focus on systems that encourage two-way information transfer. In several distance education programs, teaching and learning activities are often ritualized, learning processes tend to become more and more instrumental, and the focus is on ritualized demands of evaluation rather than on *learning* in a dynamic interaction with the reality (Lorentsen et. al. 1989). In fact, the whole struggle of distance education centers on removing distance by using face-to-face interaction study or learning centers, and supporting course work with other media and student support. But the question is how. What kind of critical infrastructure is needed for the efficient and effective use of distance teaching and learning? Questions such as these are still not addressed fully. Pedagogically, distance education is still at its early stages of development, and there is a lot that needs to be learnt, explored and experimented on.

Despite some similarities in some cases, combination of media technologies or media mix differed considerably from country to country. In most case one particular channel or technology proved dominant, while others were assigned a supportive role(s) in the process. Radio played a key role in the Minerva Project in Brazil, Radio Mathematics Project in Nicaragua, the Radio-Assisted Community Basic Education (RADECO) Project in the Dominican Republic and *Radioprimaria programming under the Direction General de Education Audiovisual (DGEAV)* in Mexico. Different from this, in the Ivory Coast, television was a dominant medium in the instructional process, printed correspondence materials served as a dominant technology in distance education for teacher training in Indonesia and Sri Lanka, and satellite figured prominently in the Satellite Instructional Television Experiment (SITE) in India.

In most studies, delivery configurations included point-to-point and point-to-multipoint. A network (multipoint-to-multipoint) system for

educational purposes was and still is rare in many developing countries. Education based on correspondence usually travels one-way - from one point (the teacher) to the other point (the learner). It can take a delayed two-way form if and when information or message travels back and forth between the teacher and students. In the context of most developing countries, one-way information transfer model, 'whether it is point-to-point or point-to-multipoint, is still common. In some cases, educational broadcasting (radio and television broadcasts) ignore the opportunities for using other media technologies simultaneously. One of the drawbacks of the Educational Television Project, for example, was that it tended to be too focused on television programming to be able to enrich and reinforce instruction by using other media technologies.

Regional Distribution and Duration

Most of the case studies show that distance education programs were under the control of one or other branches or departments of government and operated nationally. By virtue of being education at a distance, they were thus not linked with any particular locations or places except for administrative reasons. The Minerva Project in Brazil, for example, was designed for a national audience in all states in which education secretariats had arranged for the organized or supervised reception of broadcasts.

The Mexican project (DGEAV), regarded as one of the earliest educational endeavors, was successful in producing eight televised lessons in support of its national literacy campaign in 1964. Some programs are still continuing, whereas others are discontinued for a number of reasons. The Satellite Instructional Television Experiment in India lasted one year (1975-1976). The Ivory Coast is another example, which after a few years, failed for a variety of reasons.

Results/Evaluations

Increasingly, results of various studies and evaluations show that distance education programs have been effective and inexpensive.

Education at a distance allows learners *to study at a time and place of their choice using self-instructional or correspondence materials, supplemented by a mix of audio or video cassettes, radio/TV broadcasts, and face-to-face tutorials* (Nielsen and Tatto, 1991). However, case studies of distance education program on effects, costs and utility are very few in number. In addition, whatever studies are available, they are beset by methodological problems, that limit their credibility and generalizability (Nielsen and Tatto, 1991). Despite this, Nielsen and Tatto note that one can notice a pattern of findings in a number of studies indicating that distance education programs are less expensive than conventional alternatives as long as their enrollments are high enough to permit economies of scale.

Evaluation, being a continuous, on-going process, is generally aimed at influencing decision-making concerning the program(s). So the results and findings of an individual case study described in this paper may have only limited value or use. Also, as Hawkridge and Robinson (1982) say, conclusions or findings of evaluators in the case studies fall into several categories: effects upon individuals, effects upon institutions, and effects regarding changes that need to be made. Despite these differences and several other limitations of evaluative findings or results, an understanding of some of the major effects and/or effectiveness of concerned programs/projects might provide some guidance for future.

The findings of the various case studies are summarized in the following way:

Major Results

- The net unit cost for the three-year teachers training through distance (TTD) was one quarter of the teacher training cost for the same period in Tanzania.

- Major lessons learnt from the study of teacher training at a distance in Kenya include teacher effectiveness, motivation,

cost-effectiveness, economies of scale, cooperation, resources, and political support.

- Findings of achievement tests indicate that students learning mathematics by radio scored significantly higher on these tests at each grade level than children who had not been taught by radio in Nicaragua.

- Also, the teachers involved in radio mathematics project were willing to use the radio lessons (and the post-broadcast lessons) in the classroom and were of the opinion that students learned well from these lessons.

- Economies of scale served as an important factor responsible for success in mathematics teaching in Nicaragua.

- Taking all evidence into consideration, RADECO students seemed to do as well as conventional school students in the areas of reading, language, and writing, and they did significantly better in mathematics.

- The performance of RADECO students was impressive, especially when one takes into consideration that they were in class for less than half of the time and that the RADECO study time was at the end of each day when the children were likely to be tired after their day's work in the fields.

- Trained national staff and the RADECO radio lessons themselves constitute two valuable commodities, sustained by virtue of the institutionalization of the project.

- In Indonesia the DE language program was more cost-effective than its conventional (pre-service) equivalent. Its effectiveness after one full-time equivalent year was almost as high as that of the two-year campus-based program and its cycle costs were only 1/3 those of the comparison program.

- Telesecundaria schools in Mexico were about 25 percent less expensive than conventional schools at that level.

- No significant difference was found in the achievement of third grade Telesecundaria and traditional students in Spanish and Mathematics.

- In the case of India, about 30 percent of Indian people who had no previous contact with mass medium were reached by the SITE, and audiences preferred instructional programs to pure entertainment.

Major Obstacles

- Young learners were not able to master the first grade curriculum in television schools because of various problems such as difficulty with graphical representations;

- Similarly, in television schools less than satisfactory progress was achieved in written French;

- There was little relevance of the television broadcasts on the environment to regional realities. The broadcasts were too fast in pace, too overloaded with information and lacked suitable educational objectives;

- There was too much production capacity and high salaries for television production team;

- Poor physical facility, difficulty with understanding other's language(s), and unenthusiastic animators in the television-based education;

- Pressure to make *rational data-based decisions rapidly under conditions of insufficient information* in the process of interpreting

most of the fast feedback data gathered in broadcast-based education programs;

- Other obstacles included shortage of distance educators or facilitators in the field, inadequate supervision, instructional inefficiency and negligence by distance lecturers;

- Lack of access to reading materials and other information sources.

- In some cases where correspondence medium was dominant poor postal services hindered communication between colleges and students;

- Failure to strike a balance between one's learning (academic) activity and other pressures related to job, family, etc.

- Also, finding staff that would become good scriptwriters for the radio production was a problem in many radio and television-based projects.

Conclusions

Despite certain negative and usually justifiable comments, several case studies concerning distance education have fairly demonstrated that education based on new communications media technology can be and have been used effectively for a wide range of educational and instructional purposes in a number of developing countries. Overall, distance education practice is on the rise in many places. New educational technology is being increasingly used across a broad spectrum of educational configurations-from primary school to tertiary level, in a variety of formal and non-formal education settings covering a cross-section of subjects and disciplines.

Results of media application must be assessed within the system in which they are achieved, no matter how imperfect that system may be. This is and will remain to be the real test of the effectiveness of

any educational medium, whether in a developed or a developing country. *What is most needed is a combination of will and resources to use new media technologies.*

Over two decades ago, Coombs and Ahmed (1974) commented:

> The heavy reliance on face-to-face oral instruction has absorbed the bulk of resources in staff costs leaving little or nothing for other aids to the learning and caused them to become the main bottleneck to expanding learning opportunities.

What has changed much since then? Not much, really. In most cases, as Edington (1988) notes, the total spending in all forms of teaching and learning aids (paint, blackboard, desks, chalk, etc.) is often much less than 5 percent of the total expenditure on education. One could do better.

Several studies and investigations have conclusively demonstrated that the principles of good educational practices, whether conventional or distance education, are not different. McGinn (1991) notes:

> The principles of good education are universal and well-known. Students learn what we hope they will learn when we teach them in ways that enable them to learn. But while these principles are universal, they can be applied in many different ways. As a consequence, the practice of education is diverse. Which application is most appropriate depends on local circumstances.

All the case studies referred to here are examples of various applications of distance education practice in a variety of settings and time frames. Some tried to apply the principles of good education and succeeded, others failed because they did not or could not do so in the face of prevailing circumstances. Time has changed but the fundamental principles of education guiding our practices still remain the same as they did throughout centuries.

References

Blanchard, W. (1989). **Telecourse Effectiveness: A Research-Review Update**. Olympia, WA: Washington State Board for Community College Education.

Coombs. P. and Ahmed, H. (1974). **Attacking Rural Poverty**. Baltimore, Maryland: John Hopkins University Press.

Edington, A. (1988). *Developing Countries*. In D, Unwin and R. McAleese (eds.) **Encyclopedia Of Media Communications And Technology**. New York: Greenwood Press.

Graham, S.W., and Wedman, J.F. (1989). **Enhancing the Appeal of Tele-Training Journal of Instructional Psychology**, 16(4), 183-191.

Holmberg, B. (1985). *Communication In Distance Study*. In **Status and Trends of Distance Education**. Lund, Sweden: Lector Publishing.

Hallak J. (1990). **Investing in the Future**. Oxford, England: UNESCO and Pergamon Press.

Hawkridge, D. and Robinson, J. (1982). **Organizing Educational Broadcasting**. Croom Helm, London: UNESCO.

Lorentsen et. al. (1989). **Technology and New Pedagogy in Open Learning**, TNP Series No. 2. ERIC Document 321764.

McGinn, N. (1991). *Foreword* in Nelson, H.D and Tatto, T. (eds) *The Cost-Effectiveness of Distance Education For Teacher Training*. BRIDGES report No. 2.

Moore, M.G. et.al. (1990). *The Effects of Distance Learning: A Summary of the Literature*. Research Monograph.

Nielsen, H.D. and Tatto, T. (1991). *The Cost Effectiveness of Distance Education for Teacher Training*. BRIDGES report No. 2.

Verduin, J.R. and Clark, T.A. (1991). **Distance Education: The Foundations of Effective Practice**. San Francisco, CA: Jossey-Bass Publishers.

Willis, B. (1993). **Distance Education: A Practical Guide**. Englewood Cliffs, NJ: Educational Technology Publication.