

Block

5

CURRICULUM DEVELOPMENT EXPERIENCES

UNIT 1

Tertiary Education

7**Course Development Process ...European Universities** by *Daniel Peraya & Claus Haessing***Tertiary Distance Education ...University of Abuja, Nigeria** by *A.A. Ujo*

UNIT 2

School Education

37**Open Learning Curriculum Development... in Queensland** by *D.G. Postle & A. Higgins*

UNIT 3

Technical and Vocational Education

59**Developing Generic Work ... Distance Education** by *S. Chamber, J C. Clift & L. Sissions*

UNIT 4

Non-Formal and Continuing Education

68**Improving Primary Health Care ... in Botswana** by *K.M. Bility & J. Odha*

UNIT 5

Materials Production

78**Alternative Methods of Materials Production** by *Fred Lockwood*

UNIT 6

Media and ICT in Teaching Learning: IGNOU Experiences

86**Media and ICT in Teaching Learning: IGNOU Experiences** by *Sujata Santosh*

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MDE-416 : CURRICULUM DEVELOPMENT FOR DISTANCE EDUCATION

Course Outline

Block 1 : The Field of Curriculum

- Unit 1 : Curriculum: The Concept
 - Unit 2 : Foundations of Curriculum
 - Unit 3 : Curriculum Issues and Trends in Distance Education
-

Block 2 : Curriculum Development

- Unit 1 : Towards Curriculum Development
 - Unit 2 : Curriculum Planning
 - Unit 3 : Curriculum Designing
 - Unit 4 : Curriculum Implementation and Evaluation
-

Block 3 : Curriculum Transactions

- Unit 1 : Instructional System
 - Unit 2 : Instructional Techniques and Materials
 - Unit 3 : Learner Support Systems
 - Unit 4 : Role of Distance Teachers in Distance Education
-

Block 4 : Curriculum Evaluation

- Unit 1 : Concept of Curriculum Evaluation
 - Unit 2 : Techniques and Tools of Evaluation
 - Unit 3 : Construction of Evaluation Tools
 - Unit 4 : Evaluation of Distance Education Sub-systems
-

Block 5 : Curriculum Development Experiences

- Unit 1 : Tertiary Education
 - Unit 2 : School Education
 - Unit 3 : Technical and Vocational Education
 - Unit 4 : Non-formal and Continuing Education
 - Unit 5 : Materials Production
 - Unit 6 : Media and ICT in Teaching Learning: IGNOU Experiences
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BLOCK INTRODUCTION

The concept of distance education through the Open University mode is one of the important innovations of this century. We have studied that Open and Distance Education is a fertile land for innovation experimentation and creativity. It fulfils the need and the urgency of the dynamic modern world especially in the globalising era. Every country whether developed or developing has to educate its learners and bulk of the population in general. The Open University system is not simply a multimedia approach to teaching, but also the concept of providing open access to higher education to all those disadvantaged groups who could not or did not join the formal stream of education, for whatever reason. Its aim is to equalize educational opportunities and to train willing learners in various fields of learning to develop their knowledge skills, and attitudes at all levels and in all sectors of education. It has done away with the conventional restrictions of place, pace, time, entry qualifications etc. It is an innovative system of education which is flexible and open in its methods and approach. Unlike the conventional teaching institution, in the distance teaching institution the learner can study at his/her own pace, place and time and can get the media support of modern technology. This system seeks to democratise education, and provides access to learning to large segments of the population groups who are disadvantaged living in remote and rural areas, working people, housewives and other adults who wish to upgrade their skills or knowledge or acquire more of a different kind. It is certainly different from the conventional system of education in providing the use of contemporary and appropriate educational and communication technology, along with print media, and without any campus based instruction.

The rapid changes and developments in modern society, latest innovations, research in educational technology, discovery of new methods of education, new kinds of communication technology, introduction of the use of multimedia in education etc. are all responsible for the development of the mode of open and distance education. These factors are behind the changes in educational curriculum and its planning. The two ingredients of education are drafted and planned keeping in view the needs of the learners, especially those from the deprived sections of society. The curriculum is planned to help the learner to get any type of education, academic, technical, vocational or professional. The system of evaluation is also meant to help the learner because evaluation is a process wherein the processes or outcomes of a programme are examined to see whether they are satisfactory, particularly with reference to its stated objectives. The progress of the learner is assessed by measurements like tests, self-assessment tests, assignments, term-end examination etc. Tutor remarks and counselling sessions providing face-to-face interaction help the learner to have two-way communication with the teacher and the institution. All these help the learner to learn effectively. But the administrators of these Open Universities need some guidelines, instructions and models in order to plan programmes and courses which can suit the needs of the learners. Therefore research in every field of distance education is necessary.

In this course on curriculum development for Distance Education, we have acquainted you with the field of curriculum, curriculum development, curriculum transaction and curriculum evaluation. In this block, we put before you, curriculum development experiences in various sectors of education viz-tertiary education, school education, technical and vocational education and non-formal continuing education and the media ICT usage in Indira Gandhi National Open University.

Unit 1 of this block deals with tertiary education. For this purpose we have selected an article on “Organisation of Tertiary Distant Education at the University of Abuja, Nigeria” written by A.A. Ujo. Unit 2 of this block deals

with school education, for which we have selected an article on “Open Learning, Curriculum Development and the Open Access Support Centre in Queensland” written by G. Postal and A. Higgins and taken from “Open Schooling: Selected Experiences” published by the Commonwealth of Learning, Vancouver, British Columbia. Unit 3 of this block deals with Technical and Vocational education. For this purpose we have selected an article on “Developing Generic Work Skills Through Distance Education” written by Mark S. Chambers, John C. Cleft and Linda Sissions. This article taken from “One World Many Voices. Quality in Open and Distance Learning Vol. – I” edited by Devid Sewart, 17, ICDE, World Conference, 1995, U.K. The fourth unit of the block deals with non-formal and continuing education, for which we have selected an article on “Improving Primary Health Care Services through Distance and Nursing “Education” in Botswana written by Khalipha M. Bility, Johnson Odharo, and taken from ICDE 18th World Conference, Pennsylvania, 1997. The fifth unit on “Alternative Methods of Materials Production” had been written by Fred Lockwood as a journal article.

The sixth article on “Media ICT’S in Teaching Learning: IGNOU Experiences” is an attempt to expose media and ICT usage in general and specific to IGNOU. The author being a research scholar at STRIDE has made an attempt to focus broad views on usage of Media and ICT Usage at IGNOU starting with global, regional and local experiences in this area. These initiatives have been undertaken by the Government of India. IGNOU is one of the collaborative agencies in using national resources for teaching and learning

All six articles deal with curriculum development in different sectors of education: University and College (tertiary) sector, school sector, technical and vocational sector and non-formal and continuing education sector, through the distance education system. You will relish the style, the method, the approach, the control and the divisions of the curriculum of the programme in the articles for their individual approach.

Each article has been provided with an “Editors’ Note” to assist you to understand its contents. The articles have been retained in their original style. Questions have been given at the end of each article and not halfway through as in other blocks. This has been done intentionally, in order not to break the flow of your reading, so that you may read the article in one go, without any break in between. This will help you to understand the contents thoroughly. The suggested answers are meant to help you assess your answers. After reading the articles, you will learn about process of identifying the aims and objectives of the curriculum, the planning and designing of the curriculum, its development, implementation, assessment and evaluation.

We are grateful to the International Council for Distance Education and Open University, United Kingdom, the International Council for Distance Education, the Pennsylvania State University and all the authors whose articles have been included in this block.

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At the end of this block, we have provided a feedback questionnaire. Please fill it after completion of this block and send it to us. Your feedback shall be highly useful for future revision and maintenance of the course. Also please take note of the time you devote in studying this block. May be you complete this block after 4-5 sittings. But for every sitting, kindly note the time separately so that you can categorically say how much time you took to read this block. You can send the feedback questionnaire by post or you can e-mail the same to: stride@ignou.ac.in. In the e-mail, please mark in the subject areas- FOR COURSE COORDINATOR-MDE-416. You may also contact us for any difficulties related to the programme in general and MDE-416 in particular.



UNIT 1 TERTIARY EDUCATION

Editor's Note:

'Education' has a new connotation in the modern world. It is now more than the attainment of certificates, degrees, etc. Modern society needs development in all fields of life, along with the provision of jobs which for one and all, has led to the emergence of tertiary education. Jobs and education can only come together through the mode of Distance Education – a new beginning in our educational activities which is not only a promise in theory but also one to be performed in right earnest. The present article elaborates this aspect clearly. The author A.A. Ujo has introduced us to the existing educational scene in Abuja and the way in which distance education began to operate.

The author first discusses what the learner ought to learn. 'Curriculum' includes all those experiences which are under the jurisdiction of the educational institution. It is the organised pattern of institutions' programme which explains subject matter, method and sequence of instructions. Curriculum should be designed so as to create and increase interest among the learners. The distance education mode of teaching is the right way to teach learners who are employed and are unable to continue their studies in the conventional university system for one reason or another. The author explains the nature of distance education and deals effectively with the cost factor. It reduces cost. Cost effectiveness and cost benefit are important features of Distance Education. Centre for Distance Learning and Continuing Education was established along with conventional university in Abuja on the recommendations of Ezeilo Committee.

The author has justified the establishment of the Centre for Distance Learning and Continuing Education because it is necessary for developing and developed nations to provide avenues for increasing knowledge and qualifications to all learners who are interested. The Centre for Distance Education at the University of Abuja is a mixed mode institution, as education is imported through both conventional and distance education systems.

Secondly the author discusses the problems faced by the planners of the system. Distance education has adopted the instructional methods of face-to-face teaching and the use of the print media i.e. printed lectures. But due to the negligence of centre supervisors, the contact or counselling sessions have not always been held regularly. Printed lectures account for about 95% of the course delivery system. After one year of the programme's operation, the field officers were faced with a number of problems:

Most of the tertiary institutions in Nigeria were undergoing a crisis which led to the closing down of most of them and also affected the Centre for Distance Education.

Finance was the second major problem which was accentuated by the problem of hyper inflation. This proved a major obstacle to the successful implementation of the programme.

The internal politics of the Nigerian University also affected the smooth running of the Centre for Distance Learning and Continuing Education of the University of Abuja.

The use of computers and audio visual instructional aids which is an important part of the distance education system failed to benefit the learners. It was of little use in the Centre because of meager financial resources. A package deal was offered to the students, who were asked to bear the cost. The harsh economic crisis prevailing in the country prevented the students from taking advantage of the facilities which the Centre tried to offer.

Curriculum Development Experiences

The introduction of the distance education mode of learning on a trial basis is a good attempt although the system resembles the conventional one, and the admission requirements are similar to those of conventional students. The planning of the curriculum is well done and the courses offered at degree level include English language, Economics, History, Political Science, Public Administration, Accounting, Geography and Law. The system has used print media and audio visual aids, and whole system was cost effective. The courses offered are for the benefit of a large number of learners.

Due importance is given to the counselling sessions and assignments. The curriculum includes the use of the available modern aids for distance learning. The courses offered are job oriented and the students are evaluated through assignments, exercises, tests, projects and examinations. Many difficulties were faced in the system of Tutor Marked Assignments and therefore TMAs were cancelled and a system of direct testing was introduced. The results of the final examination are subject to external moderation, which makes it more learners centered and learner oriented.

The curriculum designed by the Centre for Distance Learning and Continuing Education at the University of Abuja is a good curriculum model and can be adopted by other institutions with some adjustments and modifications.



COURSE DEVELOPMENT PROCESS: DESIGN AND PRODUCTION OF TEACHING MATERIAL AT THE FERN UNIVERSITAET AND THE OPEN UNIVERSITEIT—A COMPARISON BETWEEN TWO EUROPEAN UNIVERSITIES

—Daniel Peraya and Claus Haessig

INTRODUCTION

Background

From 1990 to 1993, in the context of European programme TEMPUS (TransEuropean Mobility Scheme for University Studies), Switzerland participated in the Fernstudienzentrum Budapest Project (abbreviated as FSZ Budapest), whose objective was to create a distance teaching centre for higher education in Budapest. The Fernstudienzentrum Budapest was inaugurated in 1991, and by 1995, it had more than 150 students. They can follow courses in the following subjects: economics, electronics, mathematics, computer science, environmental protection, social sciences, pedagogy, agronomy, and modern languages. Courses are taught in German by the FernUniversitaet of Hagen, Germany (henceforth FU), and in English by the Open Universiteit of Heerlen, Netherlands (henceforth aU).

In the long term, the FSZ Budapest can play a pilot role and through multilateral collaboration participate in the renewal and development of distance university studies in Hungary and other Eastern and Central European countries (Kommission des Europarischen Gemeinshaften [KEG], 1990). Indeed, in the context of current political and socio-economic upheaval, Hungary attributes an important role to teaching and, in particular, to distance training. The project relies on a partnership structure involving Hungarian and other European higher education institutions (EU and EFTA).¹

Two Swiss university centres were given different mandates. The first, initially attached to Zurich University, then to Basel, is mainly concerned with the intercultural problems that necessarily arise in a trans-European collaboration. It has also become involved in the training program for tutors (Allemann-Ghionda, 1992). The second work group, composed of members of TECF A (Unit for Learning and Training Technologies) of the Faculty of Psychology and Education Sciences of Geneva University, has been making a comparative study of the methodologies of development of training material furnished to FSZ Budapest by FU and aU since 1991 (Peraya & Gardiol, 1992).²

The study by Peraya and Haessig (1992) that is the basis of this article describes the pedagogical concepts and the development of training material at FU and aU, emphasizing the didactic and methodological aspects. It also describes the teaching, educational, and institutional traditions of the two universities. These last aspects determine the frame of reference and the perception of learning and the learner, and they also influence the design of teaching material. The quality and efficiency of distance training material should thus always be analyzed in two ways: first, in the educational and institutional contexts broadly speaking and, second, for their intrinsic pedagogical characteristics.

The scope of this study is far broader than the context of the FSZ Budapest Project and the TEMPUS Program. Our work presents numerous aspects that are closely related to the general question of distance training and to the development of learning material; that is, design, production, and evaluation. First, the comparison brings to light two distinct types of distance universities that clearly

illustrate the difference between “distance university teaching” and “open and flexible teaching” (Commission des Communautés Européennes [CEE], 1991a, 1991b; Van den Brande, 1993). At a time when distance university teaching is being presented as the alternative to existing forms of education, we feel it is useful to clarify these two models using case analysis. Also, the French-speaking tradition often seems to consider the English Open University and Quebec’s Tele-Université as their reference institutions (this situation is partly the result of the work of France Henri and Anthony Kaye, 1985). In reality, the German and Dutch experiments are just as interesting, but for linguistic reasons, they are hardly known: our study offers the first French-language monograph dedicated to them. Finally, there is practically no literature in French on the current Hungarian distance teaching system. (The interested reader should consult the original report [Peraya & Haessig, 1992].)

The study was based on several surveys conducted in Hagen and Heerlen in 1992. A rich literature exists in the domain of instructional design, which is generally defined as the systematic process of analyzing learning goals, developing, and evaluating instruction (see Dick & Carey, 1985; Gagne, Briggs & Wager, 1988). Many models of instructional design were presented and studied in detail (Stolovitch & Larocque, 1983). Nevertheless, people involved in designing and producing course material at FU and au do not refer explicitly to these models. This study makes it clear that they present themselves more as practitioners than as theoreticians. *They consider their approach to be a pragmatic and original answer to their daily work more than a critical and theoretical reflection on it.* For these reasons, the study was based on interviews with leaders of the managing teams (Dr. J. Wurster in Hagen and Dr. F. Gastkemper in Heerlen) and on the analysis of a considerable mass of written documentation referred to in the bibliography of this study.

Institutional Structure of the *FernUniversität* and the *Open Universiteit*

The two partner universities of FSZ Budapest are typical examples of distance teaching in Western Europe. Let us first emphasize their similarities. *They were both born of the will to reform the face-to-face university system by democratizing studies, increasing access to higher education for people already active in professional life, and reducing the number of university programs with resident requirements.* Their recruitment base is very similar: the typical student, aged 25 to 38, combines a professional life and studies. Available study time is therefore less than that in a traditional university framework. Both institutions offer, in addition to instructional materials, a structure for face-to-face work: study centres for counselling, tutoring, and examinations. The study centres thus have the function of supervision and individualization that are so important for supporting and motivating students.

As to the differences, they lead us to consider each of these two universities as typical of one model of distance university training. On the one hand, the FU is a distance university, providing classic university training but at a distance, and, on the other hand, the au is an open university, offering an alternative model to traditional university training. Let us review the differences:

- “Open” university vs. “closed” university:

The FU tends to resemble classic German and European university training, with the consequence of limiting access to studies to only those students with a secondary school diploma (FU, 1991a, 1992). Contrary to that model, the OU is, as its name indicates, a university open to any interested person over 18, independent of his or her qualifications. If both universities are “second way” universities, only the Dutch one is really a “second chance” university.

- “Teaching and research” university vs. “teaching” university:

The identification of the FU with the classic university model has as a consequence the involvement of titular professors in fundamental research as much as - if not more than - in teaching. The FU is both a research and a teaching institution; the OU is primarily dedicated to teaching and broadcasting knowledge. Research is thus an accessory activity for its teachers.

The specificities of these general viewpoints have repercussions not only on the organizational forms of these institutions but especially on the methodology and approaches to designing teaching materials.

Designing and Producing Teaching Material:

A First Overview

We have analyzed the specific characteristics of the teaching material produced and used by both universities in a three-fold procedure: a comparative inventory related to the principles of structuring the teaching materials; a presentation of design, theory, and methods; and, finally, a description of the existing design and production practices.

Since their creation, both universities have followed the path of innovation. Integrated media - written, audio-visual, electronic, and interactive - appears in all their programs under the name of Medienverbund or Mediamix (FU and OU respectively). Both universities conform to what appears to be a general rule in this domain: written material constitutes the basic medium, and it represents about 80 to 90% of the teaching material, whereas audio-visual, electronic, and interactive media amount to between 5 and 10% (Sauve, 1994). However, both universities are considering increasing the proportion of interactive teaching in the years to come.

The written material of the FU is structured into teaching units that are sent to students twice a month. The units are in form of small booklets, which makes them easier to update. The au, on the other hand, makes the entire course material available to students at registration. This material is in the form of bound books. The result is greater flexibility for the students but less flexibility for modification or updating: a course is considered a finished product and is not revised for five years.

The design of courses at the FU relies on the homogeneity of a curriculum. The Dutch distance university opted for a modular system. The au courses must be able to be integrated into different study programs. The flexibility and the savings created by using the larger scale are that much greater.

Although a different logic governs their course design, both universities have opted for a comparable system of segmentation of teaching adapted to the students' work and lifestyles: bimonthly mailing for the FU and four-hour course units at the ou.⁴

This brief description of the teaching materials produced by the FU and the OU allows us to anticipate the important differences that an in-depth comparative analysis of didactic methods will bring to light. The following pages are dedicated to this analysis. Because concepts such as “course design”, “design of Material” and “production of material” do not have universal definitions and because there are many translation problems from Dutch and German into French, and from French into English, when necessary we provide the definitions adopted in this study.

DESIGNING THE TEACHING MATERIAL: PEDAGOGICAL AND METHODOLOGICAL APPROACHES

The Design Process at the FU: Main Issues

From the foundation of the FU, its fundamental research institute, the Zentrales Institut für Fernstudienforschung (ZIFF), made it a point to formulate a didactic concept capable of guiding the development of distance teaching material (Melton, 1977; Peters, 1975). For Peters it is not the content - the subject matter - but rather the learning process and the objectives that must be placed at the centre of reflection and of the process of design and production. From this perspective, he recommended that learning objectives be attained as much as possible through technical media (1975, pp. 3-9). He defines designing teaching material as a global process, as described, for instance, by Wagner (1991, quoted by Oliver, 1994). It includes:

- the analysis of jobs, tasks, objectives, content, and audience; and
- the design of curricula, units and lessons, media and materials.⁵

The FU's production centre, the Zentrum für Fernstudienentwicklung (ZFE), still conceptualizes the distance teaching situation on the basis of these general principles.

The design of teaching material at the FU is based on an analysis of the system in its three interacting components: the learner, the subject matter, and the media (Fig. 1.1). In traditional face-to-face teaching, it is ideally up to the teachers to handle these three aspects: in principle they master the content, the learners, and the human and technical media (themselves, their voices, and their presence and the blackboard, print materials, slides, overhead transparencies, videograms) all at once.⁶ Of course, this ideal model does not always correspond to the reality of the classroom: too often, teachers emphasize the content to the detriment of the other two components, with well-known results.

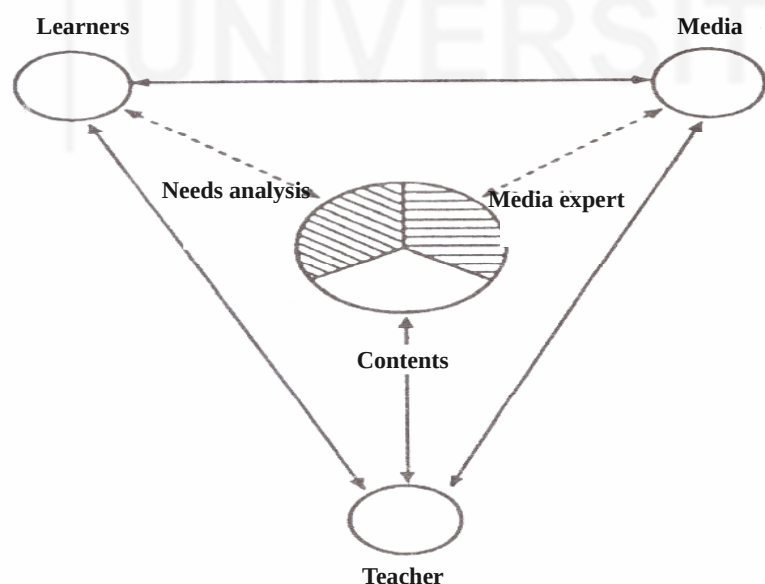


Fig. 1.1: Fern Universitaet: The Interacting components of a distance education system (after Dr. Wurster)

The reality of distance teaching transforms this situation in a decisive way. The teacher and the learner are separated by physical and temporal distances so that the need to transform the contents for distance transmission gives the media written, audio-visual, or electronic—a degree of autonomy unthinkable for a teacher in the face-to-face situation. To say that this teaching material enjoys important autonomy emphasizes the fact that it constitutes a whole, an entity,

and that its value resides in its self-sufficiency and degree of completeness. This situation dismantles the interactions schematized above: learners and media become components that are external to the teacher, whose role is reduced to the elaboration of the subject matter. Paradoxically, whereas the constraints of distance teaching maintain the teacher's role of external subject, expert, the teacher must take into greater account than in the face-to-face situation the two "externalized" components (i.e., the learners and the media).

So the FU brings in new actors—the expert in teaching media, the expert in pedagogy, and the needs analyst—who have the task of helping the teacher to manage the dissociation between the three components mentioned earlier. The teacher remains in the centre of the system but becomes the pivot at the intersection of the requirements of the learners, the media, and the subject matter. The existence within the ZFE of a section called "Didactics of Subjects" seems to be a necessary consequence of this model: the experts in pedagogy are at the disposal of the teachers and cover all the different subjects.

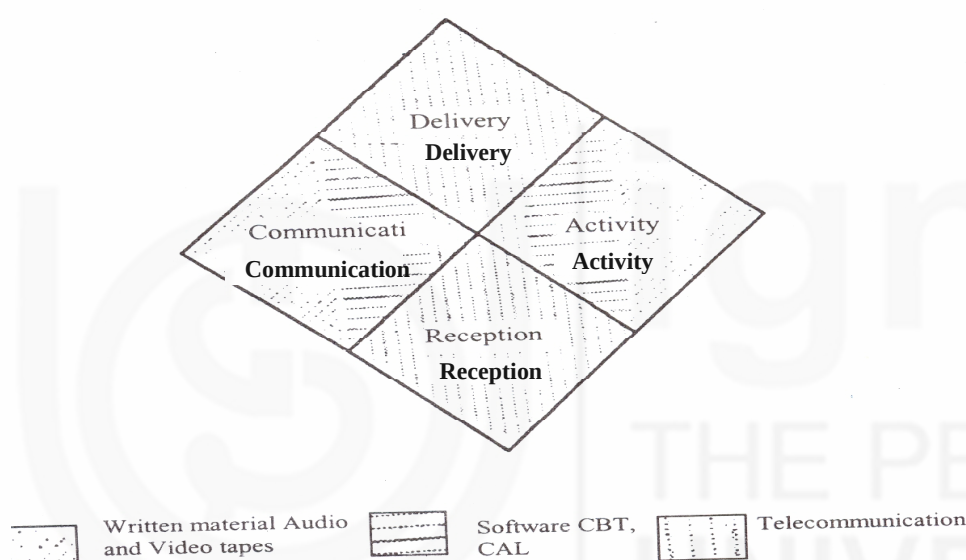


Fig. 1.2: FernUniversitaet: Role and use of the different media

The interactionist model of the components of the system developed by the FU cannot satisfy all the requirements of distance teaching without relying on a methodology of media. If the written page constitutes the principal medium of teaching activities, the university nevertheless aims to develop what it calls learning through integration of the media (Lernen im Medienverbund). Fig. 2 shows how the FU defines the role and use of the media in the process of teaching/learning in a taxonomic perspective. To this end, it defines two reference axes, graphically represented by the two diagonals of the lozenge.

The first refers to the process of distribution/reception of knowledge; the second, to the forms of instructional intervention determining any learning process, activity/communication. The advantage of this model lies in its ability to relate the use of the medium to learner motivation in a self-instruction situation.

From the perspective of distribution/reception, the teaching material used—printed matter, audio, or video cassettes—is unidirectional. Although it has certainly proven its efficiency for transmitting knowledge, this type of material is deficient as a medium for communication and activities. Indeed, the activities offered to the learner—readings, exercises, or homework—are, from this point of view, rare and strictly limited to asynchronous forms of communication, with low rates of interactivity. Motivation comes only weakly from the learning medium: it is essentially incumbent on the learner to be self-motivating.

By contrast, media such as interactive software or telecommunications offer communication links and sparks for activities that could remedy the uni-directionality of the distribution/reception process; teaching recovers an element of learning based on active, communicative behaviour. This model is the goal for FU; it represents an ideal objective for the evolution of its current pedagogy and practices, although the actual proportion of interactive and communicative teaching material currently remains minimal in comparison to material that simply presents content.

THE DESIGN PROCESS AT THE OU: MAIN ISSUES

An Overview

Like the FU, the au claims to follow an “original didactic concept.” It follows the principle that “without its own didactic concept, a distance university cannot succeed in attracting and keeping students” (Open Universiteit, 1990, p.26). So it has from the outset undertaken the formulation of a method of design for its teaching materials that is in keeping with the requirements proceeding from its mission. The au has attempted to apply its general concept of training at every level of its institutional structure and to its organization chart, including the level of the units that produce teaching material. The au has also developed its didactic concept from a pragmatic perspective: it is not presented as a finished or definitive pedagogical model, nor has it an ambition to become one. Rather, it is a frame of reference, a set of “eclectic” ideas (ibid.) that integrates objectives, didactic principles, theoretical knowledge, know-how, expertise, and a way of handling interactions between the partners. That is to say, it is more a guide to action based on experiential knowledge than a constituted theory.

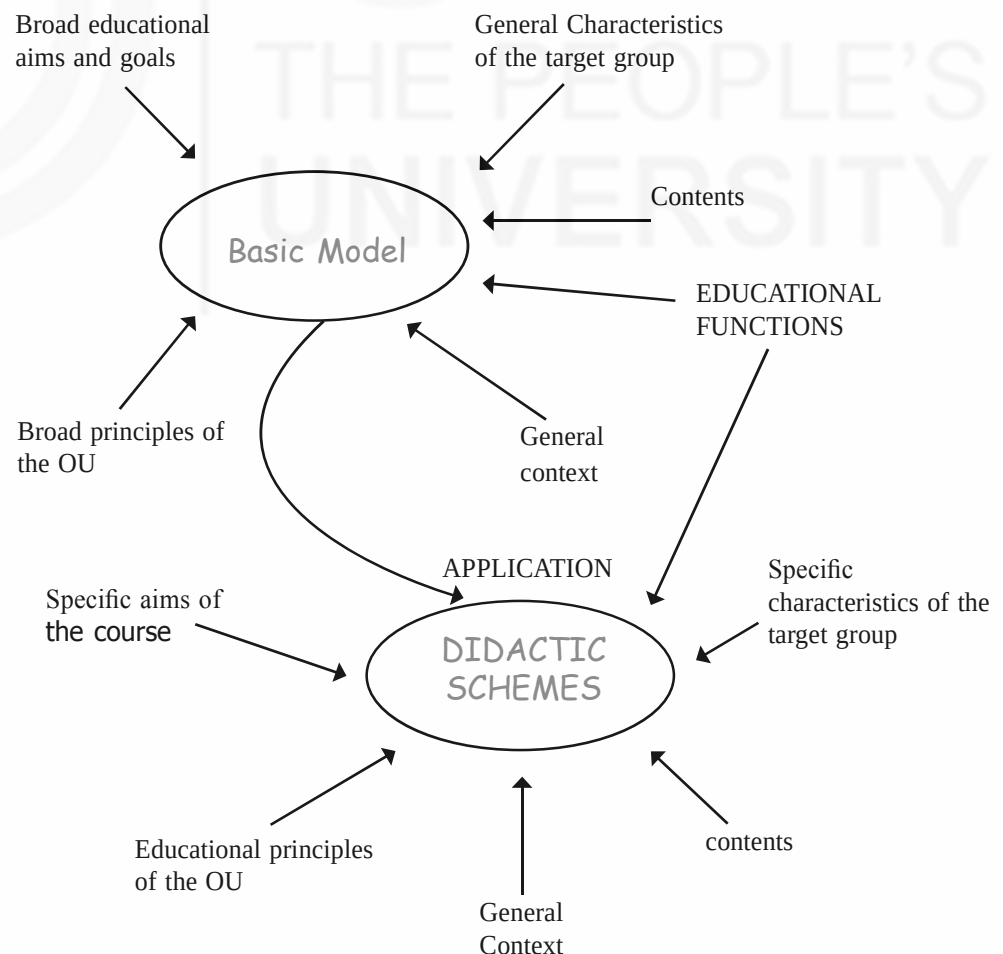


Fig. 1.3: Open Universiteit: The model of the design process (after G. van den Boom, OU)

The OU has chosen to emphasize training and knowledge dissemination rather than fundamental research and production of knowledge. This deliberate choice expresses itself as true attention to the target audience. The objectives that arise from this focus relate to scientific subject matter, technical know-how, and the capacity for self-training. Let us quote for reference:

- knowing and understanding the elements of a subject field: the concepts, terminology, definitions, methods, theories, and models;
- learning to use the methods and techniques that are specific to the subject;
- mastering the process of acquisition and presentation of scientific knowledge;
- acquiring a critical mind; and
- Learning to research and use specialized literature as well as all other documentary sources.

These general objectives, which proceed from the priority given to teaching, determine the basic structure of a course (or basic course model). They constitute a general model, a sort of meta-model, because they are linked neither to a subject nor to specific content. They are, in reality, a set of specifications to which written courses must conform and which make it possible to give them a common didactic design. This design is the basis for formulating, at a second stage, the didactic plan of the course, which will, in turn, take into account the subject matter and course content (Fig. 1.3). Gradually, however, the requirements of pedagogical practice and of the subjects have led to variations of the basic course model, one of the most frequently used of which is the study unit model (Fig.1.4).

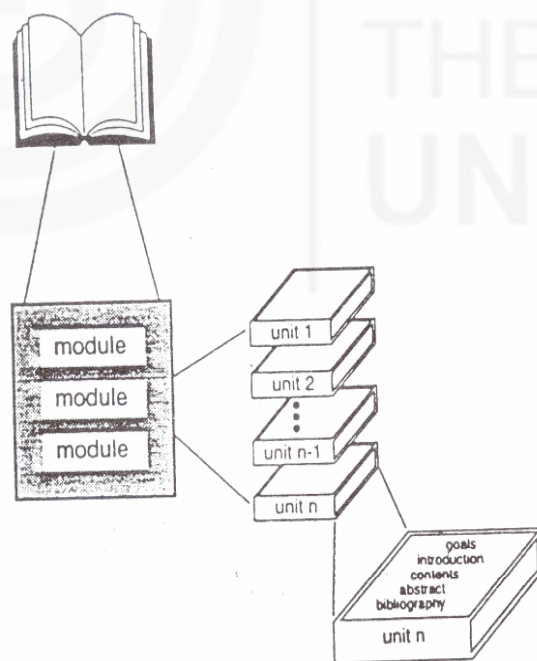


Fig. 1.4: Open Universiteit: The printed course's model (each study unit entails four hours of work)

The latter model is designed especially to adapt to the learner's situation: indeed, it must be possible to study the course in the context of family and professional life. To achieve this purpose, the course is sub-divided into a series of short study units—about four hours—each including study guidelines, intermediary summaries, and revision exercises. The general structure of a course, therefore, is as follows. Each course begins with a general introduction. Each unit begins with a brief preamble linking it to the preceding unit, proceeds to an exposition of the

content, and ends with revision and self-evaluation tests. The body of the unit, the content, is supplemented by study guidelines, which are printed in the margin of the text (Fig. 6).

On the whole, a course based on the study unit model combines the following characteristics:

- the material is specially designed for each course 8;
- the text contains learning aids, such as the intentions and goals of the; programs, explanations about the objectives, homework, exercises, and self evaluation tests with answers;
- the text and the study aids are integrated;
- the course is highly structured into a number of study units;
- the basic (i.e., printed) material is made available to the students in full; and
- Electronic media are entirely integrated into the course design.

In comparison to this study unit model, the textbook/workbook model, which is the second most common model, separates the presentation of the content and the didactic tools. The textbook contains the whole body of knowledge notions, concepts, and so on—required: it is structured so that it is understandable and usable by the student in self-study. However, it is the workbook that contains the study guidelines: it presents the objectives of the course, the introduction and conclusions, self-testing exercises, case studies, comments about certain passages in the textbook, deeper analyses, an index, and, finally, a general recapitulation. The workbook regroups the work directives and the study aids: it attempts to motivate as much as to structure the student's work. More than the study unit model, this second model makes it possible to introduce the student to separately written texts presented in an academic style of writing, which are not as highly structured as the textbook.

Hence, the construction of the courses at the au is determined by two forms of logical reasoning: on the one hand, there is modular logic, which implies that courses may as a rule be freely combined in a curriculum, and, on the other hand, a learning logic, which proceeds by segmentation of the subject matter into four-hour units. This approach presumes that the student will be self-motivated and follow the pre-programmed rhythm of learning rigorously inscribed in the course structure. At the FU, on the other hand, the regulation of the students' rhythm of learning is organized by the institution, which fragments the course and makes bimonthly mailings.

The strong integration of the different components of the institution (faculties, departments, institutes, services) expresses the overall concept of the Dutch Open University, but it may also result from the demands of designing and producing instructional material. As well, this integration constitutes the condition of success of such a development. One would thus observe, at all levels in the institution, the will to translate the basic pedagogical concept structurally in order to create the concrete conditions for its accomplishment. From this perspective, the interaction and integration of the components are essential. We will analyze, in turn, the integration of the different agents participating in the development of teaching material, the integration of the subject matter, and, finally, the integrative design of the media.

The Integration of the Actors

The need to integrate all the professional skills required for the development of teaching material was underlined from the very beginning of the au. The

methodology setup therefore integrates these three agents: the teacher or the scientist, who is the subject expert; the instructional design specialist, designated at the au by the term “educational technologist”; the tutor in charge of supervising the students, who works in the study centers (Fig. 1.5). Of them, only the first two participate actively in the process of designing material. The tutor is considered one agent in the learning environment and plays a decisive role at this stage: the demands of this role are considered in the instructional design. The direct collaboration between the teachers and the instructional specialists, the interaction between the constraints and the requirements of the three roles combine to guarantee the quality of the product: the scientific quality and the academic level first of all, which depend on the subject expert; and the instructional quality next, which depends on the educational technologist.

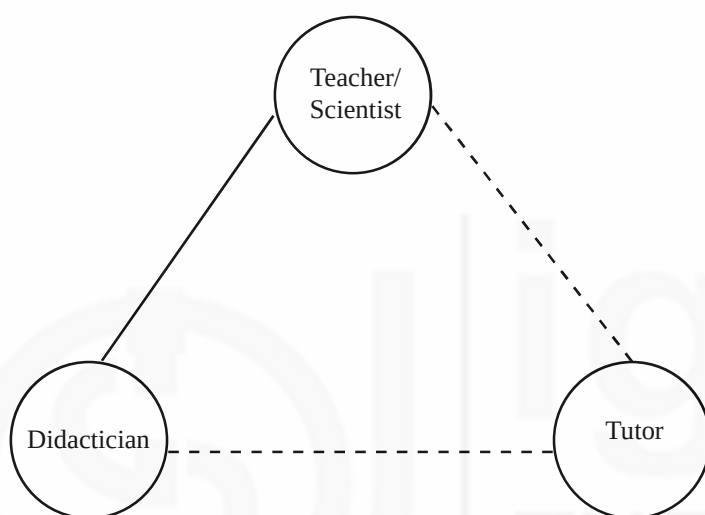


Fig. 1.5: Open Universiteit: Agents in the design process

This arrangement created a defining institutional framework that organizes and structures the collaboration between author-teachers and educational technologists. This collaboration could not have been left to the haphazard effects of individual goodwill or privileged interpersonal relationships. All instructional material is produced by a team, including teachers and experts in pedagogy under the leadership of a project head, who is also an expert in the subject. The au is working on a project designed to complete this plan for horizontal integration of specific skills. This project aims at building an expert system, based on the teachers’ and subject experts’ knowledge that will allow the instructional specialists to create teaching material using strict criteria for design and production control. The teacher would no longer have the function of author; instead, as an expert, he or she would provide knowledge and expertise to develop the system that the educational technologists would use. The production of teaching material would rely on the interaction of various closely overlapping kinds of expertise.⁹

The Integration of Contents: The Modular System

The courses normally constitute the basis of any study program. Ideally, each of them may be integrated into several programs belonging to different disciplinary fields or levels of study. A course may constitute either an autonomous unit in the context of further education or an element in a study curriculum leading to a higher education degree. This sort of modular approach meets the requirements of flexibility, and because it has this approach to courses, the au attains a high degree of integration in its programs and teaching fields. It offers the students many options for combining courses, thus increasing the flexibility in the level”

of training that is available and the degree of freedom in the program. The demands of modularization, however, imply such a level of generality that it is difficult to design courses for specific audiences. Conscious of this difficulty, the au is relying on the evolution of electronic media to make it possible, in the near future, increasingly to customize the content of its courses for specific user groups (open Universiteit 1990, p. 27).

The Integration of the Media: Mediamix

The idea of mediamix proposed by the au corresponds to the idea of Medienverbund espoused by the FD. The similarity of these two expressions accurately mirrors the similarity of approaches and ways of working. For a better presentation of instructional material, both universities used printed, audio-visual, and interactive media. They allocate considerable resources to the development of non-print media. However, if one looks at the composition of the courses offered in both universities, written material constitutes the basic teaching material for presenting 80% of the content: audio-visual and interactive media simply have a complementary role.

The significant difference between the two universities lies at the level of procedure that leads to the integration of the media into a course. At the FU, the inclusion of audio-visual or computer media always happens at a second stage; it is developed on the basis of a pre-existing print course. At the au, on the other hand, it takes place at the beginning of the design process and is an integral part of it. Four criteria then determine the design of a course. In order of importance, they are:

- the availability and flexibility of a medium in relation to the freedom of place and time for study;
- the instructional function in relation to the learning objectives and contents; the pragmatic function, notably in relation to the student's motivation; and
- the costs of development and use (Gastkemper, 1988, p. 51).

These criteria define a pragmatic attitude about the use of the media: the simplest in a given context, the most efficient, and the least costly. It appears obvious that, in the context of university teaching, written material will constitute the basic medium: it is an established fact that does not, however, reflect any pre-established hierarchy of the media. No medium appears to be considered secondary today, and each one is constantly evaluated according to its strong and weak points (Van Enckevort, '1991, PP: 10-12).⁰ The difference between complementarity and second place takes on great importance here. The evolution of teaching technologies could easily redistribute the relative roles and importance currently attributed to each of the media in the concept of mediamix. This possibility of change seems particularly true for interactive media and the forms of tele-presence or communication mediated by computer networks.

THE PRODUCTION AND EVALUATION OF TEACHING MATERIAL

Production practices necessarily correspond to the design methodology. By the term production practices we mean the processes that lead from the initial project of course design to the distribution of the product once it has been created. These processes bring in the scientific, pedagogical, technical, and administrative components of any distance university: the subject fields organized within the faculties, the specialized departments in charge of design and production, and finally the technical services that create the material and those in charge of its distribution. The main questions therefore concern the forms of collaboration between different agents, on the one hand, and the degree that the fundamental methodological principles are achieved, on the other.

Printed material

At the FU, the production of material is determined above all by two fundamental elements of which we have already spoken: on the one hand, the heritage of the German university model, characterized by the great autonomy of its teaching faculty in matters of teaching and research, and on the other hand, the prevalence of printed material, notably the study guide, in relation to which audio-visual and interactive media hold a secondary role.

The printed material conforms to a standard model that strictly defines both its structure and its appearance. Course authors are given rigorous guidelines in a publication specifically prepared for them (FU, 1991 b). The standardization of page layout of printed material facilitates the authors' work, but it also structures the work of the learners by developing in them certain reading habits. Technically, the ZFE has developed style sheets for the authors or the faculty secretariats use to input and shape the texts. The model corresponds to the. Specific requirements of distance teaching and also to the FU's specific mode of distribution. Each course is divided into units, the Kurseinheiten, and these are sent to the learners on a regular basis, usually bimonthly. Fig. 6 shows the typical course structure. An introduction explains the objectives of the course, gives an overview of the subject matter, indicates the various stages of learning, and provides study guidelines to the student. The bibliography and the glossary constitute the classical tools for research and personal work in any university training. As for the course units, they usually take the shape of study guides (Studienbrief), which may refer to a textbook or basic work available in bookshops, not produced or published by the FU. Very rarely, the course units take the form of a simple study program (Leitprogramm), which tells the student the steps to follow for studying the reference textbook.

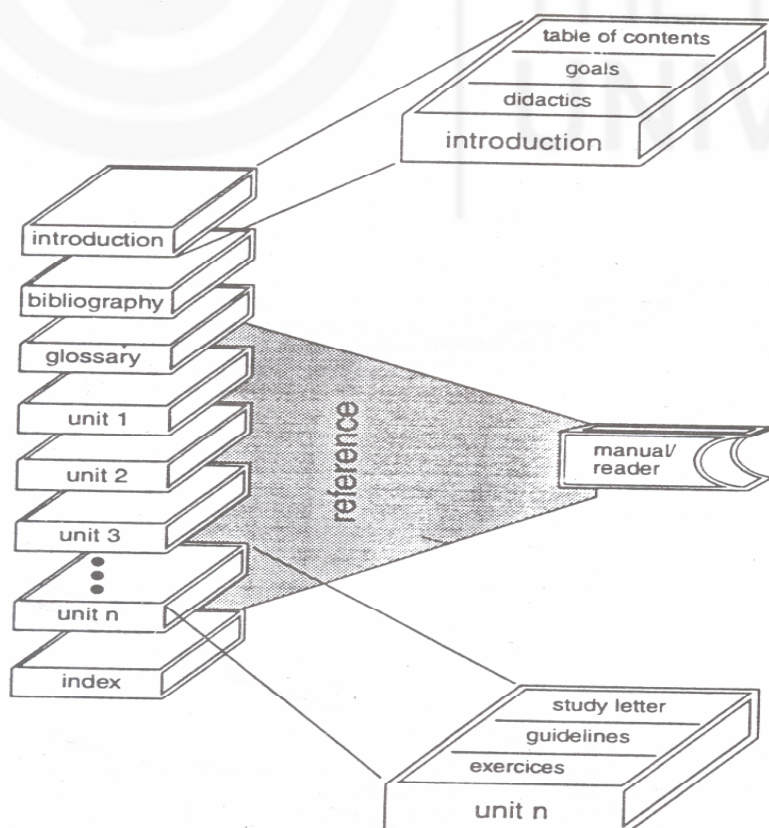


Fig. 1.6: Fern Universitaet: The Printed course model

The printed courses are not only intended to inform and transmit knowledge; within the limits we have indicated, they are also intended to motivate the student: they include exercises, recommended readings, and directions for additional work as well as available resources and the audio-visual and interactive media.

The setup of a course is the exclusive responsibility of the professor. In principle, he or she takes on the design, the production, and the successive revisions of the printed teaching material. The professor is free to delegate these tasks to external authors, whom he or she selects according to their academic competence. In fact, about half of the 1,500 courses of the FU were produced this way, by a sub-contractor. But these outside authors, like the teachers, are obliged to respect the guidelines of the Kurze Anleitung.

This is the practice if not the philosophy of the institution. It shows a certain inconsistency with the theoretical model. At the same time, it constitutes a practical middle path because it takes into account the institutional constraints specific to the university environment in which the FU operates. The responsibility and the autonomy of the faculties - Fachbereiche - remain unchanged, but they are nonetheless tempered by the rules for structures and shaping the courses. To a certain extent these guidelines represent a consideration of the specific learning situation of distance studies.

For production of printed material, the ZFE defined a general framework and monitors development: this is indeed the purpose of the template for page layout and of the writing-aid tools. Furthermore, the ZFE has the potential for imposing a common instructional approach: the instructional designers could theoretically implement one. However, except for formal editorial guidelines, the ZFE chooses not to do this, preferring to persuade rather than to require. In terms of instructional techniques, it offers its services and its skills, leaving the authors the freedom to use them or not. Its intervention is thus at the level of technical assistance—for the production of graphs and figures, for example not at the level of design.

The operating principles for producing written material can be explained mainly by the prevalence in the FU of the prerogatives of the traditional German university world. It is also explained by the nature of the printed material itself. At the FU, instructional material is designed to meet the need for speedy publication and distribution and ease of updating. Published in paperback, the printed material does not acquire a definitive status. In theory, it can be revised each year, either for academic reasons, such as the evolution of knowledge, or for instructional reasons. The division of courses into separately published units seems particularly well adapted to this guideline because a partial update does not require a complete reprint of the course.

The case of complementary media

Audiovisual or interactive teaching material makes use of skills and production tools that are beyond those of the individual authors. For this reason, they are produced in a framework different from the one just described. As a result, the role of ZFE, complementary in the process of production of printed material, becomes dominant; and for this very reason, the methodological model for the production of teaching material is more rigorously applied as far as the role of instructional designers is concerned.

Because of the complementary, or even ancillary; role assigned to audiovisual and interactive material, the decision to create such accompanying material for a printed course occurs in a second phase, at the end of the process of the first evaluation and the updating of the material. The initiative lies with the author or with the ZFE.

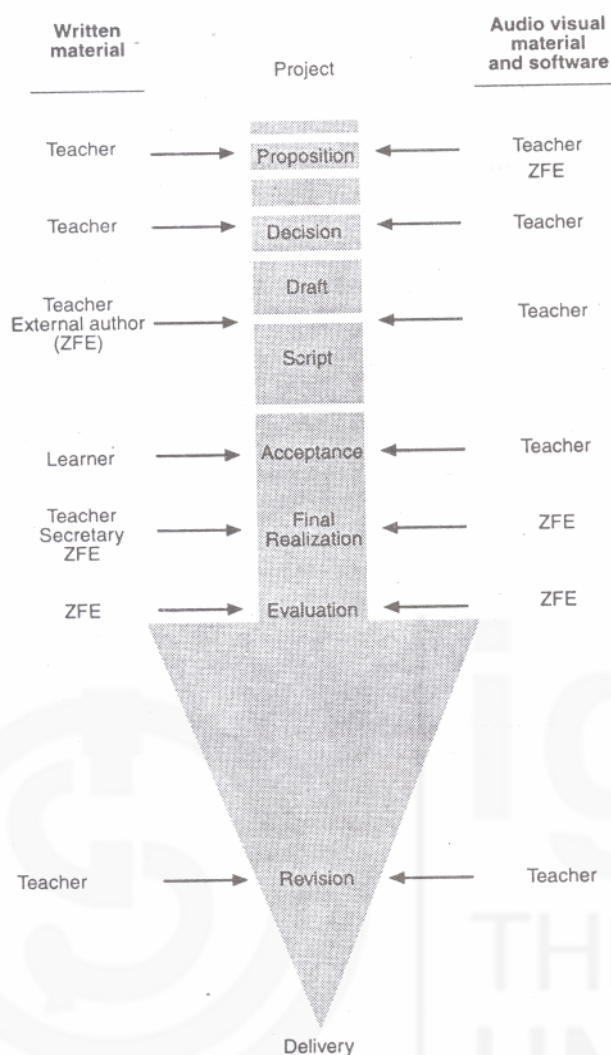


Fig. 1.7: FernUniversitaet: Agents and phases of the course development

- The decision to include additional media is the responsibility both of the professor involved and of the ZFE. It is made on the basis of a feasibility study that takes into account the following criteria:
- The methodological aspect: the complementary material has the function of activating and motivating. The new technologies are considered more able to sustain the isolated student's self-motivation than the traditional written medium.
- The inherent requirements of the subject taught: written or graphic presentation may be poorly suited or inadequate for presenting certain content, such as processes.
- The evaluation of costs and the availability of production facilities.

The university budget does not require consideration of criteria of profitability process, such as economies of scale, number of students, and cost-effectiveness. 12 The design and production are then entrusted to the ZFE. The expert in the pedagogy of the subject is responsible for the design, in consultation with the professor in charge. Once the production is finished, there is a last administrative step. So that the course may be distributed, the professor will examine the course in its finished form and authorize it. It is an official way of "taking delivery" of an order after checking the quality. This process is summed up in the Fig. 7.

The evaluation of the teaching material

The evaluation of the teaching material is part of the task of the ZFE. It takes place at the end of the first year a new course is used. After having used a quantitative and statistical method of evaluation for several years, the ZFE has finally opted for a more qualitative approach, implemented by an opinion questionnaire called “Criticism of the Training Material” (Lehtextkritik), distributed to a group limited to five to eight students. The responses are then synthesized by a specialized service of the ZFE and commented on by the instructional experts of the same service. Finally, the evaluation report, which has no sanctions or constraints, is transmitted to the author who may, in preparing a revised version, take into account the remarks and suggestions. After each revision, the course undergoes the same procedure.

The production process at the Open Universiteit: Main Features

We have seen the extent to which the requirements and methodological criteria for the design of material constituted an informal conceptual framework, characterized by a pragmatic approach. It is a different matter with the production process, which is defined by a very strict procedure governing all the partners (faculties, experts in didactics, logistics, and administration): it defines, among other things, their respective roles and modes of collaboration.

The development of a course generally follows three successive stages, each of which leads to decision making and to rigorous evaluations before proceeding to the following stage. These three stages are:

- the proposal of a synopsis;
- the elaboration of a detailed plan; and
- the publication of the course.

The synopsis

The proposal to create a new course may originate from the faculties, the administration, or the teachers. Most often, however, the initiative comes from program committees within each faculty who recruit several members of the teaching staff. The proposal takes the shape of a synopsis of four to five pages. It is a comprehensive course description, which contains the title and the definition of the target group, the didactic model adopted, the media chosen, and a production schedule. This first document also proposes authors assigned to write the course.

This plan must comply with the various ad hoc criteria previously mentioned. But since 1991, the au has introduced other requirements:

- Implementation factors concerning distribution, practical classes, tutoring, and exams; and
- Expected life-span and availability of media technologies (van Enckevort, 1991).

After being submitted to the Centre of Educational Production (COP), this plan must be approved by the Rectorate of the au, and it is only after this procedure that a more detailed course plan may be developed.

The course plan

The course plan elaborates the course project and provides details, for example of the general structure (the table of contents) and the teaching objectives. It leads to the creation of the team responsible for the production, the “course team.” This is

where the collaboration between the different partners involves (authors, experts in didactics, media specialists, collaborators from the production logistics service) is organized. The course team also brings in one more experts on the subject in question. They are in charge of the academic quality of the project; they are not, strictly speaking, part of the team of author—the group thus constituted is responsible to a project leader, who is s a member of the au and who is also outside of the group of authors.

The course team takes on the following duties:

- the design and elaboration of the subject matter is the role of the authors recruited from among the teachers of the au or externally (the au frequently has recourse, like the FU, to authors outside the institution);
- selection of media appropriate to the content, in the framework of mediamix, is the role of the team from the Centre of Educational Production (COP) and also indirectly, through consultation, of other departments of the au, the Centre for Innovation in Educational Technologies (OTIC), the Department of Research and Evaluation (OuE), and the Department of Administration of Applications and Examinations (EuI);
- the evaluation of the quality of the developing course is the role of the outside expert and of the COP team¹³;
- the definition of the learning environment, which also in part addresses the role of tutoring, is a role in which the COP participates; and
- Management of the project in terms of overseeing the collaboration between the different partners and monitoring deadlines and costs is the role of the project leader.

The course team may be subdivided into several subgroups, each of which is in charge of one of the media used. These subgroups will then work in parallel.

- a member of the faculty concerned;
- an expert in didactics from the Centre for Educational Production (COP); and
- a member of the production logistic section, which assembles the technical services for the production of the different mediated components of the course.

The production of the courses

After these two preparatory stages, the phase of concrete production begins, and authors and instructional experts meet at collective work sessions. All through this third phase, the project leader and the outside expert make evaluations. When the course - in its written and non-written media components - reaches a level judged satisfactory, a first version is submitted for testing to a group of students hired and paid for this task. The results of this evaluation may give rise to corrections and revisions, which constitute the last stage of the process before the faculty concerned officially accepts the course and forwards it to the reproduction services. The procedure, which leads from the proposal of a course to its final production, thus brings in many agents in a framework of collaboration, whose single objective is to guarantee a high level of quality. This requirement, inherent in the obligations of any academic institution, applies equally to the written material—200—page works on average—and to the complementary material. Let us take as an example a course in the History of Art accompanied by a video disc containing 30,000 reproductions of art works or any other production or teaching material on interactive optic disk available at the OU. This requirement for quality explains the relatively long production times - on average close to two

and a half years - in comparison with a maximum life span of a course, limited to five years. The au is aware that this situation causes significant extra costs. This fact was mentioned by the committee of experts who made an evaluation of the institution as a whole in 1990 (OU, 1990, p. 43). The au, however, expects a decrease in costs as a result of the constant progress in the field of electronic media (cf. Fig. 8, which sums up the process of design and production of teaching material).

The evaluation of courses

The importance given by the OU to quality control of its teaching material appears clearly through the preceding analysis. During the course preparation phase, the quality of subject matter is evaluated by professors belonging to the au and by external experts. The didactic quality is controlled by specialists in didactics and media of its Department of Educational Techniques. Before its final publication, an experimental version of the material is submitted to a group of students. Quality control of courses at the au does not, however, stop at procedures that precede distribution to students. At its founding, the au wanted to set up a comprehensive evaluation program implemented at three points: during the design phase, during the launching of the course on the market, and, finally, after a five-year period of use. (de Wolf, 1988, pp. 21-31).

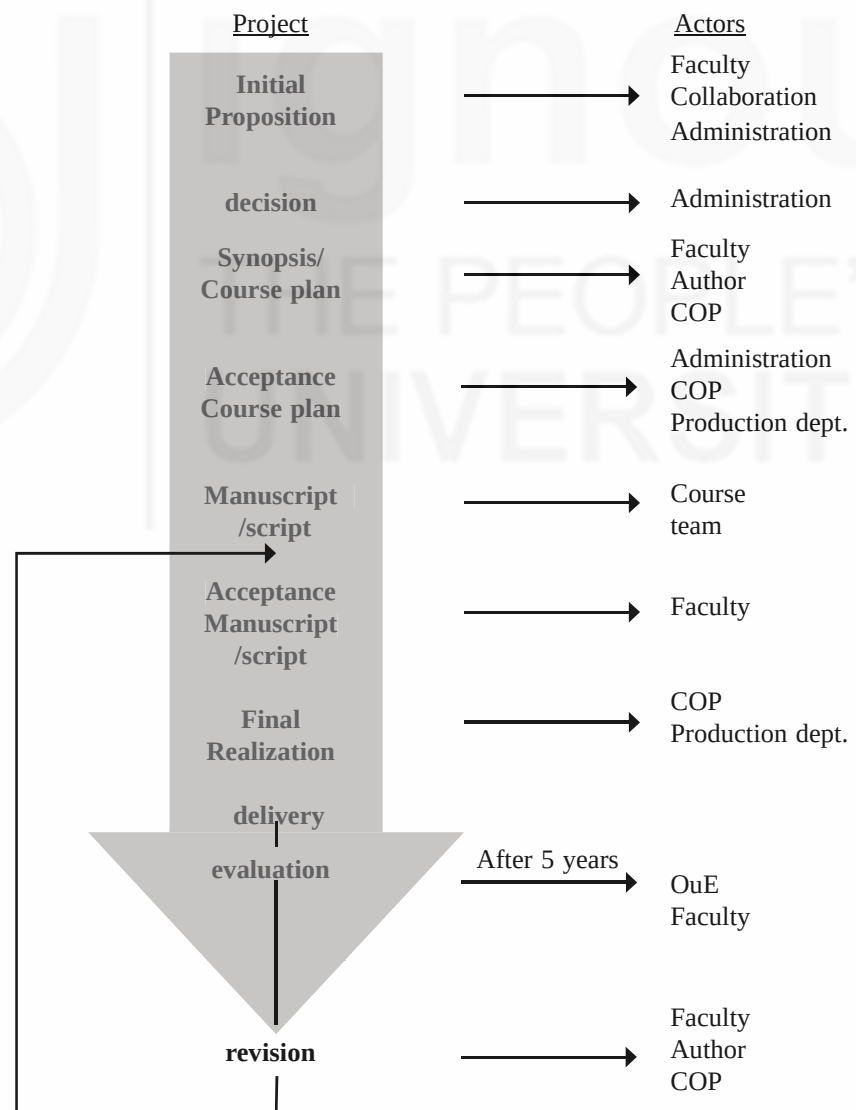


Fig. 1.8: Open Universiteit: Actors and phases of the course development

We have just seen how the first phase of evaluation is organized. The second evaluation stage was never attained because it was too costly. As to the third

phase, it is of particular interest to us in this context. The statutes of the OU prescribe that every course must be re-evaluated after five years. This evaluation should make it possible to decide whether it is necessary to begin an update and, if so, on what terms: updating and adapting the subject matter according to developments in academic knowledge or of the instructional processes in that field. This task falls in principle on the Department of Research and Evaluation (OuE), which conducts an inquiry via questionnaire to the students; it completes the database with more qualitative information collected at the study centers because of their proximity to the learners. At the end of this double inquiry, a detailed evaluation report synthesizes the results of the evaluation procedure and furnishes the criteria for updating the course. The updating is then undertaken according to the same process as the design of a new course, that is to say, by teamwork; grouping teachers/authors and experts in didactics.

However, in practice the evaluation does not happen this way. The QuE does not have enough personnel to ensure the re-evaluation of all courses as they reach the five-year deadline. So the re-evaluation only covers a restricted numbers of courses, in general, five per year. Only the most used courses or those in which problems have been pointed out by students, teachers, or tutors are thus the object of a re-evaluation. Most of the courses must therefore be updated without a really systematic re-evaluation. To fill this gap, the faculties generally make an informal evaluation of their own by establishing an evaluation file that will be taken into account in the updating process.

It follows that the quality control of the teaching material of the OU is most effective during the design stage. This situation underlines once again the preponderant role played in the development process by the instructional specialist, who does indeed seem to constitute the central pivot of quality control of teaching material at the OU.

SYNTHESIS AND CONCLUSION

The design methodologies and the production processes for teaching material differ considerably from one institution to another.

There is no doubt that the FU formulated the most coherent theoretical model for its methodology. It is based on the interaction of the three components of distance teaching: the subject matter, the media, and the learner. During the design of the teaching material, their respective roles are shared by four agents:

- the teacher/author, central pivot of the subject matter development process;
- the expert in media didactics;
- the expert in didactics of the subject as media specialist; and
- the needs analyst, who takes the learner into account

This diagram, for which we refer the reader to Figs land 2, is completed by media methodology, which takes into account the axes of distribution-reception and communication-activity in the process of self-study that is specific to distance teaching. These axes refer to taxonomy of the media based on the distinction between written, sound, visual, and interactive material.

The OU has chosen, for its part, a more pragmatic methodology and approach; therefore, it is less formalized. It also takes into account taxonomy of the media comparable to that of the FU, but its methodology is inspired less by an integrationist model than by a series of extrinsic criteria, which it divides up into three groups:

- market criteria, such as cost-effectiveness and economies of scale;

- implementation factors, such as distribution, ease of examination, provision for practical work, and tutoring; and
- Accessibility, applicability of technological context, and, finally, the life expectancy of the technologies.

At the OU the process leading from design to final production of a course follows a strictly structured approach. Methods of collaboration between teachers/authors (professors and academic team members) and education technologists (experts in didactics of the media and of the subjects) of the didactics department (COP) are strictly regulated. The aim is to ensure the best integration of the functions involved in the development of teaching material. Each course produced by the OU is thus the result of team work. The requirements of academic quality and instructional effectiveness are considered at every moment of the process leading to the final product. The production of complementary audio-visual and interactive material is entirely integrated with the production of the printed documents, which is the basis for the originality and specific contribution of this methodology. However, there is a surprising disparity between the pragmatism of the methodology and the formalism of the production process, which is not explained here.

The production of teaching material at the FU does not follow the same pattern. In keeping with the dominant status of the titular professor in the structure of the FU, the production of the written document is entirely the responsibility of the author, who only complies with a code of editing rules recommended by the instructional department, the ZFE. The production of complementary material is, on the other hand, entrusted to that department. Such material is only produced, however, after the circulation of the written material. It is the work of well-defined team members working in the framework of the ZFE: video producers, computer specialists, graphic specialists, and experts in didactics of the subject. One thus sees a reverse position from that of the OU; a strictly structured model but great pragmatism during production, no doubt because the ZFE must accommodate the operating principles of the institution, notably academic freedom.

At the outset we noted that all production of distance teaching material traditional printed material, interactive software, communication technology, and so forth - requires a strictly defined pedagogical outlook and methodology. This is indeed the case for both the universities studied. However, the methodologies set up do not simply follow the criteria of their respective outlook or pedagogical bias. They are shaped as much, if not more, by the institutional realities and constraints. The role of the teacher, which greatly determines the processes of production of the material, is from this point of view a characteristic example. Conceptual models and institutional models therefore seem to condition each other mutually to push the practices in a direction that the pedagogical criteria do not entirely govern.

Acknowledgements

The authors gratefully acknowledge the help of the collaborators of the two Universities, Hagen and Heerlen, who welcomed them. They also thank their colleagues of the Basle University, M. Marino Ostini, scientific advisor at the Federal Bureau for Education and Science (OFES) and coordinator of the Swiss participation in the project Fernstudienzentrum Budapest, and M.P. Dunand (TECFA) for having kept an eye on the proofreading of this paper.

Notes:

- 1) On the one hand, there are the Technical University of Budapest, the Management Development Centre of the University of Economics Sciences,

the Faculty of Mathematics of the University of Eotvos-Lorand, the National Institute of Vocational Education and, on the other hand, there are the distance teaching universities of Hagen (FernUniversitat) in Germany and of Heerlen (Openuniversiteit) in the Netherlands, the Study Centre for Distance Teaching in Vienna (Fernstudienzentrum Wien), the trans-European Association SATURN (Europe's Open Learning Network) and finally the Federal Office of Education and Sciences (OFES) in Bern.

- 2) The participation of TECF A in this project is a continuation of the involvement of the University of Geneva in the Start-up Project (European Programme DELTA), one of whose objectives was to analyze the design and production methodologies of the European multimedia producers. The first stage of the report was published as an internal report. The second stage of TECFA's contribution to the project concerns training of trainers in pedagogical design and engineering.
- 3) We have, however, seen that exceptions exist. The bearers of a degree of a short study cycle type (notably engineering studies) have access to the FU through remedial courses, and certain candidates who have professional experience but no secondary school degree may attempt university entrance examinations.
- 4) For the most used course model, the study-unit model.
- 5) Our research evokes many questions among which we would like to note the effect of didactic material on learner persistence. Of special importance in this context is a study under completion by the Distance Education Office of the Communaute Francaise de Belgique. It seems that the redesigning of the written courses, taking into consideration both pedagogical aspects and aesthetic appearance, has had the effect of reducing by half the rate of student dropout (Dechenes, 1994).
- 6) Classical pedagogical communication in face-to-face situations also takes the forms of mediatized (M+) or non-mediatized (M-) communication: the first case refers to technological mediatization whereas the second to the classical situation of direct face-to-face oral communication from a person, a speaker whatever may be his role - trainer, teacher, animator, and so forth. In fact, in practice it is rare to find educational communication situations of a "pure" form. Both approaches are usually combined, alternating between verbal presentation and a mediated image. On this subject see D. Peraya (1994).
- 7) Several other models have also been developed, such as the "workbook! Source material model" and the "essay/thesis model."
- 8) It happens exceptionally that certain courses from other institutions are adopted.
- 9) Things were not always thus. At the founding of the OU, printed material was designated as the basic medium, and on the basis of it non-written media were to be developed progressively. See, for example, Henk de Wolf, "Development of Courses and Quality Control Instruments for Educational Innovation," in 'The Open University of the Netherlands after Four-Years Facts and Developments', op.cit., p. 26. Concerning this question of equality between media, it appears that we are facing an evolution towards this equality. We were able to observe diverging opinions about this during our interviews.
- 10) An analogous system exists at the service of distance learning of the French community of Belgium: the service sends printed texts as the student sends back his homework; the learners' rhythm of work thus determines the rhythm

and regularity of the mailing of training material. This way of operating is understandable considering the high dropout rate and the relatively low fees.

- 11) Let us add that the apparent production costs of a video cassette amount to approximately 1000 DM/minute; personnel costs (700,000 DM per year for a team of seven people) as well as the initial investment of 2,000,000 DM for the studio as included in the budget of the ZFE. Year in and year out, the video production reaches an average volume of 10 hours a year. The production of a cassette generally spreads out over a three-month period (estimated figures furnished by the ZFE).
- 12) The Department of Research and Evaluation only intervenes for the evaluation of courses already in use.

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ORGANIZATION OF TERTIARY DISTANCE EDUCATION AT THE UNIVERSITY OF ABUJA, NIGERIA

—A.A. Ujo

INTRODUCTION

This paper discusses the problems of infrastructural constraints on the development of distance education at the University of Abuja in Nigeria.

Distance education is relatively new in Africa. It started after the termination of colonial rule in the 1960s. After independence, educational facilities expanded rapidly. This expansion notwithstanding, many prospective learners could not be absorbed into the conventional educational institutions. There was, therefore, a need to set up distance education institutions. Most African countries responded by setting up such institutions. These new institutions were faced with numerous problems. Some of these problems include:

- inadequate financial resources;
- constraints on the application of multi-media;
- mode of instructional delivery;
- inadequate teachers to teach in contact sessions and write course materials;
- escalating cost of printing course materials; and
- Lack of cooperation from sister institutions.

THE EVOLUTION OF DISTANCE EDUCATION AT THE UNIVERSITY OF ABUJA

The establishment of the Centre for Distance Education at the University of Abuja was a result of the acceptance by Federal Military Government of the report of Ezeilo Committee which recommended that a conventional university should be established in the New Federal Capital Territory of Abuja. It further recommended that the Centre for Distance Learning should form a strong component of the University to carry out the functions of the defunct National Open University.

The Centre for Distance Education at the University of Abuja is a mixed mode institution as both conventional and distance education is offered. (Verduin and Clark, 1991)

Unlike most other distance education institutions in Nigeria, the distance education programmed at the University of Abuja provided university education. The courses offered at the first degree level are English Language, History, Economics, Political Science, Business Administration, Public Administration, Accounting, Geography and Law.

The University is also cooperating with the Administrative Staff College of Nigeria to run a Masters Degree programme in Public Sector Management by distance education.

The Centre for Distance Education formally came into existence on 1 February 1990. Study centers were established in various parts of the country. These centers were located in the following towns; Abuja, Lagos, Benin, Enugu, Owerri, Ife, Oyo, Zaria, Kano and Jos. These study centers were located in cooperating tertiary institutions. They are the centers of academic activities for the students and their lecturers. Students and staff meet there for lectures,

tutorials, seminars, tests, examinations and practicals during contact sessions. The cooperating institutions provide such facilities as classrooms, lecture theatres, libraries, laboratories, and other equipment for use by students. Students are expected to attend study centers closest to them or the ones to which they are assigned by the centre.

Instructional methods

Distance education earns its status and prestige through the adoption of multi-media approach to teaching and learning (Chander, 1991). Distance learning takes place only when the student actively learns through two or more strategies which allow for at least some interaction between him and his teacher(s) in spite of their separation in time and space.

At the University of Abuja, distance education has adopted the instructional methods of face-to-face teaching and the use of printed lectures.

Face-to-face meetings (otherwise called contact sessions) are held once every month in the study centers. Because of the special requirement by the Nigerian Council for Legal Education, contact sessions of Law students are held every weekend.

Centre supervisors expected to monitor teaching during the contact session. In the few years of operation of the contact session it was discovered that most of the centre supervisors do not perform their duties. As a result of this, contact sessions were not held regularly.

The printed lecture

The printed medium accounts for about 95 per cent of the course delivery system. This is made up of self-instructional lectures which are well structured and properly sequenced to make reading orderly and systematic. The lectures ensure students' active participation, as they contain exercises which the student has to do within sections of each lecture. Solutions to these exercises are provided, so as to enable the students to assess their own learning progress. There is also a self-assessment exercise which the students have to do at the end of every lecture. They compare their answers with those supplied by the course writer to assess themselves. After studying all the lectures contained in one unit, each student answers the Tutor-Marked Assignment questions (unit test) under examination conditions. The answer scripts are submitted for marking.

The development of printed material suffered an initial set-back when it was realised that the university does not have expertise in some of the subject areas. The writing of such study materials had to be contracted out to lecturers at the Ahmadu Bello University, University of Jos, Abdullahi Baycro University, Kano and University of Horin.

The experiment with other universities did not achieve a positive result. Only a few lectures were written and submitted from these universities. Lecturers from these universities had to attend to their primary responsibilities of teaching and research. The writing of course materials for the University of Abuja seemed to them of secondary importance. They would do it only if time permitted. Those who submitted their written materials did so after the expiry of the deadline. As a result of this, when the first set of students started their programmes, most of their lecture materials had not yet been produced.

Written course materials undergo many processes before they are finally accepted for publication. The subject coordinator screens written materials to ensure that they meet the standard required. After this initial screening exercise the materials are subjected to three forms of editing, namely; content, course and language

editing. The initial arrangement is that editing of course materials should be done in the writing zone, since the University of Abuja do not have the expertise to do the job. Although a few of the course materials were submitted in edited form, most of them were neither screened nor edited.

Just as with the writing of course materials it was decided that where experts cannot be found in Abuja, outside editors should be employed. To this end, the services of the Nigerian Educational Resource Development Council were employed. Experts in the different areas of the programme were identified and assigned to edit the various courses. Little came out of this arrangement as it turned out, as the Nigerian Educational Resources Development Council did not have expertise in the various subject areas.

The University explored the possibility of conference editing. This entails bringing editors together at an agreed time. Due to unforeseen problems it was not possible to implement this idea.

Problems of field offices

After one year in operation the field offices were faced with a number of problems. First, most of the tertiary institutions in Nigeria were undergoing crises which led to the closing down of most of them. The programmes of University of Abuja Distance Education became victims of such crises. Contact sessions were not held during the periods of closure of such institutions. Indeed, contact sessions in most of the field offices ceased completely during the 1992/91 academic session.

The second problem is that of escalating cost. The cost of running each study centre is like that of running a whole institution. Against this background is the hyper inflation of Nigeria. The programme is underfunded due to lack of support from the National Universities Commission and the Federal Ministry of Education. A token take off grant of Naira 1.5m was received from the National University Commission in 1991. Another Naira 1m from federal Ministry of Education in 1992. Up to the end of 1993 the main source of income for the programme came from student fees. The following fees are charged per session of 1993/94, expressed in Naira:

1) Law	9,000
2) Business Accounting	6,000
3) Diploma	3,500

The third major problem was related to the internal politics of Nigerian Universities. There was a nation wide strike organised by the Academic Staff Union of Nigeria Universities (ASUU). The University of Abuja chapter of the Union did not join the strike. The national body reacted punitively. One punishment was to ban academic staff in other universities from participating in the academic programmes of the University of Abuja. The result was that the study centres and other field offices were suspended. The only study centre in operation now is the enlarged Abuja Study Centre. Students in the ten other study centres have been asked to transfer to the enlarged Abuja Study Centre.

The use of computers and audiovisual instructional packages

The use of computers and audiovisual instructional packages is becoming popular in distance education in many countries, yet the distance education programme at the University of Abuja cannot take full advantage of it. It cannot be fully computerised because with the meager financial resources at the disposal of the University, it is not possible to buy enough computers. Only a few computers have thus been installed. The Commonwealth of Learning came to the assistance

of the University with the donation of some desktop publishers. These machines are being used for typesetting study material. Given the volume of the work, computers are not adequate. Computers that can be used for record keeping are not available. Furthermore, students cannot afford to buy personal computers because of the cost.

A mini recording studio has been set up with the assistance of the Commonwealth of Learning. At the moment the University has only the facilities for audiovisual recording. Because of the high cost of recording videocassette tapes, the University is concentrating on audiocassettes for recording some of our lecture materials. There are now a few courses for which audiotapes or cassettes have been prepared. These include some of the English Language and Use of English courses. The present policy is that students should buy their own tapes and send them for recording any lecture materials they want.

The response from students has not been encouraging. No student has sent a tape for recording. The harsh economic climate in the country has prevented students from taking full advantage of the facilities of the distance learning programme.

Academic programmes

The academic programme of distance education at the University of Abuja resembles the conventional one except for minor modifications. Each distance learning course is one year longer than the regular one. The courses currently being offered are:

Degree level courses

- B.A. (Hons.)—English and History
- B.Sc. (Hons.)—in Economics, Political Science, Business Administration, Public Administration, Accounting, Sociology, and Geography
- B.Ed (Hons.)—in History and English
- LIB

Diploma level courses

- Law
- Banking and Finance
- Public Administration

In the conventional section of the University, degree courses are offered in Computer Science, Mathematics, Physics, Chemistry and Biological Sciences. It was the intention of the University to offer these courses to distance level students. This idea has been shelved. The financial cost is beyond the capability of the University.

Admission requirements

There are various types of admission requirements for distance learning institutions. The UK Open University and Athabasca University do not insist on formal qualifications, whereas the Terbuka and the Central Radio and Television University admitted students only if they have either a formal university entrance qualification or have qualified in the national examination held.

The admission requirements for distance learning students of the University of Abuja are similar to those of conventional students.

Course evaluation

Students are evaluated by means of assessment through assignments, tests, exercises, project reports, and examination.

A number of assignments are given at the end of the unit of each course in the booklets of lectures already prepared and supplied to the students. These are to be submitted as required through the study centre supervisor, who will arrange for their marking. After marking, the scripts will eventually be returned to the students with comments by the marker.

The question and results of the final examination are subject to external moderation. The guidelines provided by the Senate of the University of Abuja are to be followed.

The first continuous assessment evaluation ran into serious problems. Lecturers in some study centres refused to mark the Tutor Marked Assignment on the ground that the honorarium for marking each TMA was too low. Many students could not meet the deadline for submitting the TMA. It was also discovered that most of the TMAs were not the original work of students. Because of these reasons, the TMAs were cancelled and a system of direct testing was introduced.

Infrastructural constraints

Communication:

One feature of distance education is the separation of teacher and learner, which distinguishes it from face-to-face lecturing, even though it may involve short periods of face-to-face meeting for both didactic and socialisation purposes (Ezeani, 1985). The realisation of this objective depends on the availability of a good and effective communication system.

The poor communication facilities in Nigeria adversely affect the operation of distance education programme of the University of Abuja. Mail delivery is very slow; letters take months to get to their destination. Often, by the time these letters arrived at their destinations, their content has been tampered with. Consequently, regular communication between teachers and learners is not possible.

Instructional mode of delivery:

The second feature of distance education is that it is media-based instruction. The term emphasises media 'freedom from classroom limitations in location and time, as well as the ability to provide needed interaction and correction' (Markowitz,, Jr. 1990).

Printed material is the main mode of instructional delivery. Because of low returns from outside writers and editors the burden of writing and editing of course material was shifted to the regular lecturers of the University. This resulted in production delays arising from the heavy commitment of the academics to their teaching and research.

The use of technical media to unite teacher and learner as an essential feature of distance education cannot be realised at the University of Abuja. Audiovisual tape cannot be put into full use because of poor response from students because they cannot afford to buy tapes. Also, most of them reside in areas where there is no regular supply of electricity.

The distance education programme of the University of Abuja started with great ambition. Initially it was designed to be one of the best tertiary distance education Institutions of Africa. Unfortunately constraints of infrastructural facilities have adversely affected the realisation of this laudable objective.

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QUESTIONS

- 1) Discuss the problems generally faced by new distance education institutions?
- 2) Mention the courses offered by the University of Abuja through the distance education system?
- 3) Explain the functions of study centres established by the Centre for distance Education, University of Abuja?
- 4) What role is expected to be played by the cooperative institutions for study centres?
- 5) Write a short note on the instructional methods adopted by the Centre for Distance Education at the University of Abuja?
- 6) Explain the importance of printed lectures in distance education at Abuja. What difficulties were faced by the centre of Distance Education at the University of Abuja in the case of printed lectures?
- 7) "The field officers, after one year in operation, faced many problems". Discuss with reference to the University of Abuja.
- 8) "The use of computer and audiovisual instructional package is becoming popular in distance education in many countries, yet the distance education programme at the University of Abuja cannot take full advantage of it." Why?
- 9) Discuss the method of evaluation of students, performance and learning?
- 10) Discuss the features of distance education at the University of Abuja at the Centre for Distance Education at Abuja.

SUGGESTED ANSWERS

- 1) a) Inadequate financial resources.
b) Constraints on the application of multi-media.
c) Mode of instructional delivery.
d) Too small a number of teachers for contact sessions
e) Experts to write course material are not available.
f) Higher printing cost.
g) Non-cooperation from sister institutions.
- 2) The courses offered at the degree level are Economics, English language, History, Political Science, Law, Public Administration, Accounting, Geography and Business Administration. The courses offered at diploma level are law, Banking and Finance, Public Administration.

**Curriculum Development
Experiences**

- 3) The study centres are the centre of academic activity for teachers and students. Lectures, seminars, tutorials, tests, practicals and examinations are arranged there.
- 4) The cooperating institutions should provide all the needed facilities like classrooms, lectures, libraries, laboratories and other aids for use by the students.
- 5) The centre for Distance Education at the University of Abuja adopted face-to-face teaching and the use of printed lectures and contact sessions; use of computer and audiovisual packages.
- 6) The printed lectures are about 95 percent of the course delivery system. They are well written SIMs. They ensure the active participation of the learners. Self assessment exercises are also provided. The University did not have subject experts to write the lectures. The services of experts from other universities were not entirely satisfactory. They attended to their own responsibilities and duties first and gave secondary importance to the work of the University of Abuja.
- 7) The problems faced by field offices were:
 - a) most of the tertiary institutions in Nigeria were facing crises which eventually led to their closure. The programmes of the University of Abuja were also affected and became victims of such crises.
 - b) contact sessions were not held.
 - c) increasing costs hindered the functioning of the institution.
 - d) there was no support from the National Universities Commission and the Federal Ministry of Education.
- 8) Due to the lack of funds students were asked to purchase personal computers and other aids which they could not afford. They were also asked to send their own blank tapes for recording, but did not do so. The harsh economic crises prevailing prevented the students from taking full advantage of the facilities.
- 9) Students are evaluated through assignments, tests, exercises, project reports and examinations.
- 10)
 - a) there is a separation of teacher and learner.
 - b) learning is media based.
 - c) printed material is the main mode of instructional delivery.

UNIT 2 SCHOOL EDUCATION

Editor's Note

Open schooling is a later entrant to the field of distance education, first being higher and other types of education. Today, many open schools in India, New Zealand, Canada, Australia, Bangladesh, Africa, Latin America offer open schooling and open basic education. The present case is from Australia, and the book from which it is taken may be read for a full view of open schooling in the world.

An article on Open Learning Curriculum Development and the Open Access Support Centre in Queensland, Australia written by G. Postle and A. Higgins has been selected for this unit. The basic idea behind the selection of this article is that it discusses the development of learning material and teaching techniques for learning in non-traditional ways. It also discusses the school curriculum in the context of distance/open learning. The authors have expressed their views and advocated that school education be provided to isolated schools and students through distance learning. They have suggested a distance education model of curriculum according to the changing needs of society. This is based on their case study of seven schools in Queensland, in which the teacher student ratio is 1:15. The Brisbane School of Distance Education is the only large school which offers senior secondary school education. To provide education, different methods have been used for better results and the improved performance of school children.

For the designing and development of the curriculum, three major institutional arrangements were made and they were allocated different responsibilities. Regional Offices were responsible for managing the staff and resources for distance education schools, for the development of curriculum material for primary and secondary levels and for distributing the same to the schools. The Open Access Support Centre was responsible for the designing and development of primary and secondary curriculum material and for distributing the same to distance education schools. The Open Access Support Centre located at Brisbon provided experts for curriculum development. But for curriculum designing and development, it was necessary to obtain the expertise of teachers and to get them to work as course writers. For the use of this curriculum, school education expected a different approach to the performance of the distance education teacher, from that adopted by the traditional teacher. The centrally developed curriculum material was used by the teacher of distance education for structuring the programmes for the students. To modify and adopt this curriculum, course writers needed considerable knowledge about the designing of curricula and the field of distance education.

To change education at all levels, the Queensland government formed the Open Access Support Centre for the purpose of curriculum designing and development and the distribution of distance education material and curriculum resources, in order to provide educational opportunities to all learners who were unable to obtain or complete education. However, open access is only one aspect of open learning. Therefore the Government of Queensland also adopted a much broader social justice strategy to provide access, participation and equity which helped to move towards the concept of open learning. Further, the authors have suggested some factors for stimulating change. In this context, a concept of regionalisation was introduced by the Queensland Department of Education to take decisions on the devolution of curriculum and the concept of the self-managing school was promoted with support from the Government to bring about change. For this purpose the roles and responsibilities of course designers needed to be clearly defined to bring about a transition from the correspondence model to the distance education model. The fact is that the correspondence model was more centralised

in comparison, since a centrally located agency designed the material and the distance education teacher used this material to teach the students.

In the correspondence mode, text book material was the basic element for teaching in school which the writers selected. To meet this kind of problem, central level expertise was needed to develop new course material/study material for each school to use their own developed material and minimise the cost of material.

The authors have also emphasised the influence of mainstream school structure and practices on curriculum material. In this context, the first issue was concern with the centrally designed material which was organised on the conventional school structure.

The second related issue was how the same curriculum would be applicable to both the conventional and distance education schools, particularly for subject areas such as physical education, health science or even for teaching approaches. For this purpose, course designers/developers were required to identify the basic methods of teaching and techniques for different subject areas.

The third issue was related to the use of class-room experience in the designing and writing learning materials and the questions of who is to write the course materials. For writing the learning material on class-room practices, good teachers who were experienced in education theories and practices were selected. The development of class-room material is bound to affect the role of tutors of correspondence education who are already teaching a number of children. The question arises as to who would provide staff and resources for the professional development of teachers. It was necessary for this to involve the Open Access Support Centre, which was to provide resources for distance education schools. Not only this, it was required to identify proper approaches which would adopt, and help to modify, the newly developed curriculum for the use of school children. The Support Centre being a Regional Office, the responsibility of providing staff and resources should be taken care of by the school of distance education.

Lastly, the authors relate the emergence of the Open Access Support Centre to the transition from the correspondence mode to that of open learning. In this context they refer to the previous history of curriculum development at school level. For this purpose they have used Hughes, model of curriculum development (1966) to explain the process of curriculum development and transaction of school level activities as well as their major components. At the central level, the curriculum development committee required some documents, the data provided in which was needed for identifying the above mentioned components such as learning outcomes, scope and sequence of the programme, teaching strategies, learning experiences and evaluation requirements. It also needed the knowledge of community expectations and of the needs and interests of students, so as to use this curriculum at the school level. In the historical context, the reigning paradigm has been the use of three major elements to provide education to the remote areas of Queensland. These key elements of the paradigm were not fit to deliver education. In this context it was essential to find out about the teaching-learning environment and the role of the teacher in providing guidance from time to time, so as to enhance the student's learning.

On an experimental basis a survey was conducted to provide free, secular and compulsory education for school children. The problem of delivering such education could be solved by appointing more teachers to visit the families of remote areas. Education administration should be strong. There was also a need to appoint experienced persons in the field of education to look after the activities of teachers and schools.

The Queensland government also tried to open numerous small schools at suitable places in remote areas, and to provide these schools that with sufficient infrastructure to attract students to them.

The government in Victoria (another Australian state) adopted a different system that these schools of the itinerant teacher. The same scheme was followed by the government of Queensland. In theory, the role of the itinerant teacher is related to the use of existing text books which will further help in clarifying the need for learner support and discussing the problems of reading and study skills with the aim of improving the caliber of students and their potential for better achievement. In practice, these teachers would visit each family. For this purpose they needed transportation facilities and also a system for contacting students for providing information about their studies, syllabus and the progress of lessons.

In the correspondence paradigm, the authors have discussed the idea of the correspondence school saying that it was derived from New South Wales, also an Australian state. In this context, emphasis has been given to the contact system, based on the resources available in the state. Because effective human resources planning and policy for school development is needed and the quality of manpower which provides opportunity to develop the system, and to facilitate the coordination of all activities of school programmes. The authors have justified and establishment of the school. In this context, valuable and favourable comments were made by the minister for public instruction at the time, to describe the importance of the correspondence system to be used to promote educational facilities to the children of remote areas in different subjects. The impact of these instructive comments was to increase the student enrolment in these schools.

The authors have also highlighted the key elements included in the correspondence paradigm, and have stated that there is a need to change the curriculum framework since the system is unable to cope with the correspondence paradigm in providing education to the children of remote areas.

Now read the article carefully and attempt of reply to the questions given at the end.

OPEN LEARNING, CURRICULUM DEVELOPMENT, AND THE OPEN ACCESS SUPPORT CENTRE IN QUEENSLAND

— G. Postle and A. Higgins

INTRODUCTION

The development of learning materials and teaching techniques for the students learning in non-traditional ways is affected by concepts of what schooling and curriculum development mean.

This case study uses the example of providing education for isolated students to show that as the ideas of what constitute schooling have changed for a teacher – school-fixed curriculum model towards a separation of these elements, to be defined as open learning, so the notions of what curriculum is provided and who provides it have changed.

The events described in the case study are set in Queensland, an Australian state that serves arguably the greatest number of school-age distance learners in Australia.

CURRENT CONTEXT

Methods used to deliver education to isolated areas of Queensland have included the following

- providing small, one or two teacher schools that are conveniently located for a few students;
- using itinerants, a scheme where young, inexperienced teachers visit homes in isolated areas at irregular intervals to provide some instruction in basic education;
- developing a system of correspondence education whereby papers containing instruction in the basics were mailed to homes; and
- the development of schools of distance education, strategically located across the state, to enhance the interaction between teacher, student, and parent.

Distance education schools currently provide education for students who have difficulty accessing conventional education.

Organizational structure of the Distance Education Model.

Seven schools of distance education operate in Queensland, each with a specific catchment area. Each school has a principal, deputy principal, and a number of teaching and administrative support staff. Teaching support is provided on 1:15 teacher-student ratio.

Direct contact with student is mainly through high-frequency radio, supplemented with a range of activities that include home visits, teleconferencing, activity days at the school, and computer links. Distance education schools offer both primary and secondary programmes. The Brisbane School of Distance Education is the largest distance education school in the state and the only one that offers senior secondary education (years 11 and 12).

The schools of distance education are administered through regional offices, which are responsible for staffing and resourcing the schools. Centrally designed and developed curriculum programmes provide the main link with the central office, the Open Access Support Centre, which is a state-wide support centre that

is responsible for designing and developing primary and secondary curriculum materials for distribution to each of the schools of distance education. The Centre is located in Brisbane, and is staffed with people who have expertise in education and instructional design, audiovisual production, computer software, and print and non-print production.

Central Model of Curriculum Development for Distance Education

The curriculum development model used by the Open Access Support Centre is similar to the “research-development-dissemination” model.

The curriculum materials are written by teachers seconded for the duration of the project. These teachers are selected because of their potential to contribute to the development of quality learning materials. Very few have had experience in teaching at a distance.

Considerable input is sought by the curriculum developers from parents, teachers, those responsible for the development of state syllabus guidelines, and educators who have worked in the area of distance education.

When the materials are complete, they are dispatched to the schools of distance education.

School of Distance Education Model of Curriculum Development

In most instances, teachers in schools of distance education use the centrally developed curriculum materials to structure the programmes they develop for their students. In some cases, however, teachers use the materials as prescriptive statements of what is to be taught. A different approach is expected: the centrally developed materials are meant to be used as exemplars of good practice. Teachers are expected to control the pace of learning and to provide feedback to students, to provide enrichment and remedial work where necessary and to assess student progress. More often than not, teachers are expected to modify and adapt the centrally developed materials. This level of curriculum development requires considerable knowledge of the designs employed by course developers in the Open Access Support Centre, as well as knowledge of principles underlying distance education.

Development of the Open Access Support Centre

In 1990, the Queensland government published *Focus on Schools*, which became the centre-piece of a government strategy to change education in Queensland at all levels. Key strategies in this document pointed to the formation of an open Access Support Centre, which would provide educational opportunities through programmes and services for all students who, because of disadvantage, were unable to access conventional education. The Centre was to be formed by bringing together a number of existing units, one of which was responsible for the design, development, and distribution of distance education materials. Another unit, a material production unit, had been responsible for the development of curriculum resources for all schools, particularly audiovisual materials.

One of the major challenges in establishing the Centre was to refocus the work of these units. *Focus on Schools* indicated that the major goal for the Centre was to facilitate greater access to educational opportunities for all learners, regardless of situation or circumstance. Open access education would achieve this goal. Open access is new phrase widely used in Australia, particularly in government circles, to imply a kind of “half way house” to open learning. Open access implies only one aspect of opening learning (ease of access) and not necessarily the flexibility and learner autonomy embraced by open learning. Since the Open Access Support Centre has been established, the Queensland government has adopted

a much broader social justice strategy that emphasises not only access but also participation and equity. This move is supported by open learning philosophy. The Open Access Support Centre responded to this move by carrying the debate past the “half way house” concept towards open learning, even though the appropriateness of this approach to compulsory schooling is still in question.

The dilemma facing the Open Access Support Centre is how to move the focus from distance education towards open learning in context where the dominant curriculum development and curriculum design frameworks are unsympathetic to the strengths of open learning, even though the system is sympathetic to social justice principles that embody an open learning philosophy.

FACTORS STIMULATING CHANGE

Although the Queensland Department of Education introduced the concept of regionalisation in 1949, it was not until quite recently that the devolution of curriculum decision-making has been taken seriously; The concept of the “self-managing school” has been promoted widely, and the government has provided considerable support in order to bring this about. However, even with support, some confusion surrounds the roles and responsibilities of participants in the curriculum development process. Any resolution of this confusion has been hindered by the debate focusing on “either-or” positions, advocates of either centralised models or school-based models taking the centre stage.

The absence of clearly defined roles and responsibilities has posed particular difficulties for a state-wide centre such as the Open Access Support Centre. For example, without clear roles, the transition from a correspondence model to distance education model has been hindered. The correspondence model was highly centralized; teachers located in the Correspondence School were totally responsible for the development of the learning materials; and they were also responsible for teaching the students for whom these materials were designed. In comparison, the distance education model was based on an idea that a centrally located agency designed the learning materials but the teachers in the schools of distance education used these materials to teach their students. Clearly, the intention was to have the teachers use the centrally designed learning materials as basis for the learning programmes they would use for their own students. The absence of policy and guidelines has led to a number of concerns about the curriculum materials developed at both the central and school levels and the processes used to develop them.

Continuation with Elements of the Correspondence Model

At the central level, there has been a tendency for too much prescription, a characteristic of the correspondence model. In the primary programme, for example, the writers selected all supplementary textbook material. Because the study material for student is written around these textbooks, a great deal of inflexibility resulted in the approach teachers use in the schools. It must be stressed that the scope and variety of this material is quite outstanding, but the fact that the materials are written around these textbooks has taken away from teachers the decisions about resources that should belong to them. The use of textbooks has also built into the design of the materials a currency that will be dictated by how long the textbooks are available. Without being told anything different, or in some cases of not wanting to believe any thing different, some parents have persisted with an implementation of the new materials in much the same way as the correspondence model. For example, they tend to feel obliged to cover all the material supplied. The fact that the materials to be covered, have increased substantially and that the role of the home tutor has changed from supervisor to tutor has been a source of unrest among parents.

Much of the centrally designed materials have been organised around conventional school structures – the school term, the school day, and so on. This organisation is understandable, as the curriculum developers at the central level are keen to ensure that the distance education materials are perceived by teachers and parents as at least the equal of the curriculum provided in conventional schools. However, this organisation also leads to inflexibility, as teachers and home tutors interpret the provision of daily lessons as work to be covered regardless of what the situation warrants.

A related issue here is the failure of those responsible for the development of the state syllabus documents to consider the implication that what they suggest and expect for conventional schools should be the same for distance education, particularly for subject areas such as physical education, health, and science or for teaching approaches that deal with attitudes and values or assessment.

A further issue here concerns a tendency for writers to draw upon classroom experiences for the design of many of the student learning experiences. Again this approach is understandable, given the fact that many writers are selected because of their superior classroom teaching ability and most have limited experience, at least initially of the context for which they are writing. Because they are “good” teachers they are also well-versed in current educational theories and practices, at least in how they might apply to classroom practice. Materials developed around a classroom pose particular problems for the home tutor who is following the correspondence model; they impose ever greater problems for home tutors who have a number of children in the family across a number of year levels.

Confusion Over Who Provides Professional Development to Teachers

While a key responsibility for the development of curriculum materials at the central level has been assigned to the Open Access Support Centre, the Centre has no formal involvement in professional development for teachers in the schools of distance education. Because the centrally developed curriculum materials are provided as exemplars for the teachers, it would seem important for teachers to be introduced to approaches that would help modify and adapt these materials for their students. The difficulty in proposing some involvement system from the fact that the Open Access Support Centre is a state-wide centre, operating in a decentralised system, while the schools of distance education are administered regionally, where responsibility for staffing and resourcing clearly resides.

CURRICULUM DEVELOPMENT: FROM CORRESPONDENCE TO OPEN LEARNING

Hughes (1966) depicts a model in a flowchart he developed to explain curriculum development in schools in Australia. Figure 1 (next page) is an adaptation of Hughes’ model but captures the implications of its major components.

While Hughes’ model was created to explain the function of a syllabus committee in a centralised model of curriculum development, it can just as easily explain the function of curriculum development at the school level.

For example, at the central level (the Open Access Support Centre) the inputs considered by the curriculum development team would originate from research literature, government policy statements, mandates, and syllabus documents. Consideration of this data would result in a design that would identify key learning outcomes, detail the scope and sequence of the programme, outline suggested teaching strategies and learning experiences, and propose evaluation requirements.

At the school level, the same framework could be used, but the decisions made and the people making the decisions would be quite different. For example, the inputs would originate from what is known about community expectations and the centrally developed curriculum framework and programme, as well as what is known about student needs and interests.

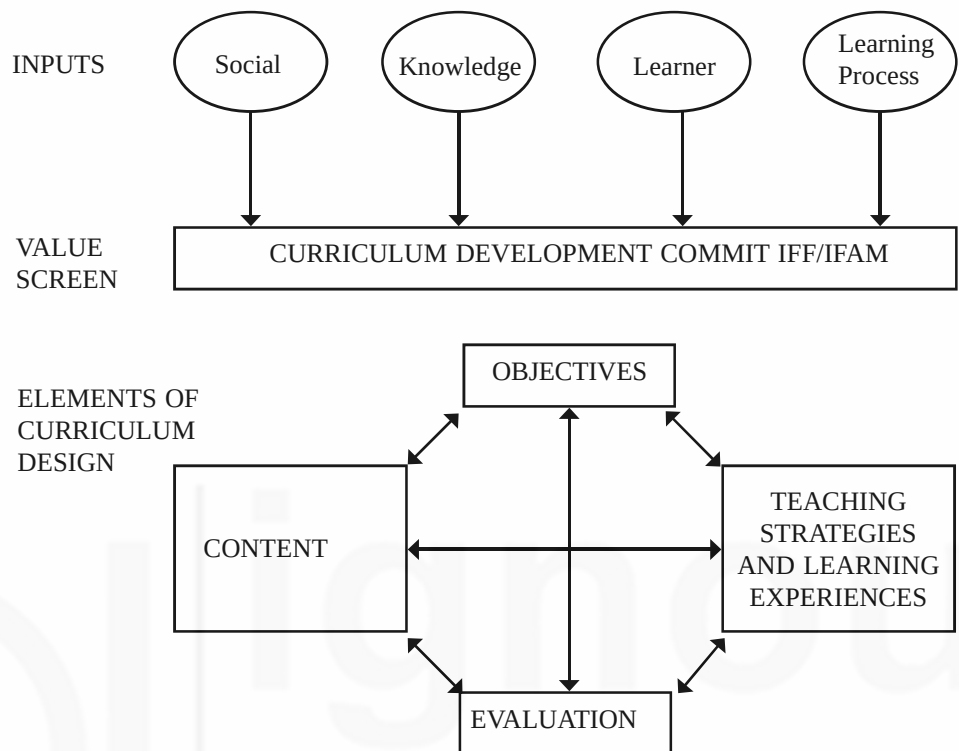


Fig. 1: An adaptation of Hughes' Curriculum Development Model

The lack of clear policies and guidelines for distance education curriculum development has led to much debate about the relative virtues of centralised curriculum development as opposed to school-based curriculum development. The Hughes' framework offers much in resolving any unproductive conflict in the process of curriculum development.

HISTORICAL CONTEXTS

The Reigning Paradigm

Almost since the time of the ancient Greeks, education has been characterised by the gathering of a number of students with knowledgeable leader (teacher) in a place specified for the conduct of education (a school). Usually, the material to be taught existed within the community and had been accepted as "worthwhile" knowledge (curriculum) necessary for the functioning of neophytes in the community.

The key elements in this paradigm include:

- the teacher, who is central to the teaching-learning situation;
- the students, who gather in one place to participate in the same learning experiences, usually delivered at the same time, in the same manner, and in the same order; and
- a common curriculum, which is based on a general acceptance of what constitutes "worthwhile knowledge" that will allow student to function in a community.

This paradigm generally remains unchanged today, but in the early days of public education in Queensland, using the paradigm's key elements to guide action created what Imershein (1977) refers to as anomalous conditions. In particular, the circumstances associated with delivering education to the more remote parts of Queensland have not fit the paradigm during the last hundred years.

The passage of the Education Act of 1875 in Queensland, at a time when similar Acts were being contemplated or passed elsewhere in Australia, sought to make education "free, secular and compulsory". Under the Education Act, public servants were required to ensure that all children of the compulsory age of schooling (6 to 14 years) received some education.

But the reigning paradigm of educational provisions could not easily supply the method of achieving this goal, because it was impossible to provide a teacher to every remote family that had school-aged children; not only were too few teachers available, but too many families lived too far from each other to be gathered together in sufficiently large numbers to warrant the provisions of a school.

Educating children who live in isolated communities in Queensland has posed major problems for educational administrators ever since schooling began in the state. For example, in 1869, Randall McDonnell, an inspector of schools in Queensland, wrote that:

There are cases where the settlers are too few, too far apart or too recently established in their homes, to be able to comply with the regulation in regard to average attendance (at school) or the contribution to the costs of the school building. In some places the people sometimes contrive, by their united labour, to erect a rough structure... and if they succeed in obtaining the services of a person moderately competent as an instructor, the Board may recognise the school provisionally, and grant a small stipend to the teacher, 'till the time comes when the residents are in a position to contribute their quota of funding a permanent vested school.

The Queensland government persisted in its attempts to ensure that teachers and children were brought together in one place to learn. They used young, poorly trained teachers, mostly young women, to staff small and remote schools, all in an attempt to sustain the reigning paradigm.

However, it was clear to all involved in providing education to school-age children that the reigning paradigm was not able to do the job. Members of the educational community were only too aware of anomalies. But a long drought and rising costs forced the government to consider alternatives to the establishment of numerous small schools in remote areas. In 1875, the government in Victoria, another Australian state, adopted a system of itinerant teachers, whose tasks included visiting as many remote families as possible. As a way of sustaining the reigning paradigm, Queensland adopted this scheme in 1901.

The itinerant teachers used the existing curriculum and textbooks in their lessons. In theory, each teacher attempted to visit a family by horse and buggy at least four times a year. In practice, however, itinerant teachers rarely visited each family more than twice each year. The teacher left textbooks, library books, and exercise books for the children, along with detailed instructions about which lessons to cover before the next visit. Mothers usually supervised the children, even if they themselves had little, if any, more education than the children. The system of itinerant teachers maintained the personal contact existing between teacher and pupil, but substituted the home for the classroom, thus still sustaining a weaker version of the reigning paradigm.

While this system provided an education for all children, the poor educational outcomes achieved by many children because the visits were so infrequent provided the impetus to search for another way of doing things.

The following analysis of the reigning paradigm emerges when Hughes' curriculum framework is applied.

- **Social:** The aim of the curriculum is to ensure that all children conformed to a similar background (Aboriginal children were largely excluded from schooling at that time) and were able to function within a homogeneous society, comprised very much of Celts and Anglo-Saxons.
- **Knowledge:** The use of common texts and readers organised by set timetables proposed that the state could and should determine what knowledge would be valuable. The system of standards, grades, and common examination indicated a disregard for the influence of circumstance or location. Knowledge of a common content prevailed.
- **Learners:** It could be argued that the state believed in *tabula rasa* insofar as pupils were concerned. The teacher imparted knowledge to pupils, leading them from darkness to light. Very few, if any of the young, inexperienced, and poorly trained rural teachers would have been familiar with Plato's or Rousseau's views on education. Most lived in some fear of inspectorial visits should their pupils fail to recite the correct facts on examination?

Learning Process: Records of inspectors' visits to schools in the later part of the nineteenth century reveal that drill and repetition comprised the main teaching techniques. The repetition of factual content completely dominated other significant learning elements such as demonstrating manual and intellectual skills, or understanding by combining content and skills to make the outcomes not only useful but also valuable.

The Correspondence Paradigm

The challenging paradigm, contradicting the idea that education only occurred in schools, came from New South Wales, another Australian state, where the government established a correspondence system. Whereas Queensland had been intent on maintaining contact between teachers and students, the new system relied heavily on the availability of young, mobile, and independent teachers, particularly young women in rural schools and men as itinerants. First World War casualty rates for young Australian men dramatically reduced the availability of these men for teaching in remote areas. In addition, the "soldier settlement" schemes of the early 1920s added pressure on the Education Department to provide more schools and itinerant teachers. In 1921, B.J. (Barney) McKenna, the new Director-General of Education, established a "correspondence school" that commenced its operations in 1922. Staff from Queensland visited New South Wales and transplanted this system to Queensland.

The Minister for Public Instruction at the time, A. H. Barlow, described the correspondence system thus:

So that educational assistance may reach parents whose children are situated at a distance from permanent country schools and away from the tracks followed by itinerant teachers, typed copies of instructions, directions, explanations and illustrations, forming a series of lessons upon the most important subject included in the primary school curriculum, are posted each week from the Primary Correspondence School in Brisbane..... The work of each class is divided into weekly portions so as to cover a half year's work in twenty (20) lessons. Typed copies of weekly lessons carefully graded are transmitted with accompanying directions, some intended for the guidance of parents.

Written lessons are then returned to the home from where they have been received. Thus, there are three sets of work in circulation at one time, one on the way to pupil, one at home in the process of study, and one returning for correction.... The work is so well systematised and explanations so explicit, that except in the case of totally illiterate adult coadjutors, the pupil's progress may be assured.

Subjects studied by pupils included English (comprising reading, spelling, dictation, recitation, work-building, derivation, grammar, composition, and writing) and arithmetic and mensuration.

During 1922, the enrolment of the Primary Correspondence School rose to 730 students.

The key elements in the correspondence paradigm included:

- the “classroom”, which was located in the home where the parent (sometimes a governess) supervised the progress of one or a small number of students;
- the “curriculum”, which was centrally designed and delivered and, while it generally reflected an acceptance of what was “worthwhile knowledge”, was restricted to the availability of suitable textbooks with which parents could reasonably be expected to cope; and
- the teachers' interaction with students, which was based on written communication with the parent or governess who was acting as mediator in the learning process.

The introduction of the correspondence system resulted in subtle changes to the curriculum framework as it related to children living in most isolated places, unable to attend a school. Using Hughes' curriculum framework, the key inputs can be described as follows.

- **Social:** The continuing use of the learning materials common to school-based learning showed that the state continued with its intention to fully integrate students whose living conditions and circumstances varied significantly from the “norm”. As before, very few Aboriginal students attended school and their cultural understandings had no place in the dominant, white, Euro-centric society.
- **Knowledge:** The use of restricted materials, as in schools, continued with a belief that the state determined what worthwhile knowledge was. The redirection of this information into written notes to be transmitted to students by either parents or itinerant teachers inadvertently further narrowed the idea of worthwhile knowledge. Without newspapers, radio, or even visitors to remote homes, the world view of isolated families was reduced. Parents, many of whom had little schooling themselves, could pass even less on to their children. Certainly, the correspondence system produced basic literacy as a major outcome, but it tended to narrow the student's outlook on life more so than a school might have done, because opportunities to interact with even neighboring children were limited
- **Learners:** Students using the correspondence system communicated by mail with teachers in far-off Brisbane. Most students received two brief visits from the itinerant teacher each year. Otherwise, they interacted socially with siblings or parents and various farm workers. As learners, they were isolated within the correspondence system.;
- **Learning Process:** The correspondence materials prepared in the early years reflected classroom instruction written for parents to be applied in “study” setting at home, not unlike that found in school. The materials were

drawn from standard readers. Students first learned to read and, afterwards, they learned to follow the Instructions for themselves as they became less dependent on the mother, home tutor, or governess for direct tuition.

- **Value Screen:** Although not articulated as such, the value screen for both classroom and correspondence work assessed the same essential elements, including Anglo-centrism, Empire, nationhood, respect for family, and a puritan work ethic.

During the 1920s and 1930s, when broadcast radio was introduced, many isolated properties found themselves in contact with the wider world. They could hear about the world's events first-hand and also hear the views of world leaders or experts on a wide range of important issues. The Australian Broadcasting Commission adopted a view of schooling that was similar to that of the British Broadcasting Corporation during the 1930s. Both provided programmes that supplemented the educational curriculum. Radio engineers and teachers could have used the technology to teach directly, but this did not happen until the 1960s.

The School of the Air radio service commenced in Cloncurry in western Queensland in 1960. It provided regular contact between teachers and isolated students in that children could hear others discussing the same lessons on which they worked. Also, teachers provided on-air assistance to home tutors, arranged school camps, and held parents' meetings, generally creating a "school" atmosphere among the isolated. Unfortunately, the School of the Air activities did not coincide with activities in the correspondence lessons.

The chief advantages of the correspondence system lay in its administrative simplicity; the curriculum generally followed that used in conventional schools and a routine could be regularised in a way that ensured participants understood their well-defined roles.

However, those involved in the system identified a number of anomalies. The School of the Air demonstrated the importance of providing opportunities for students and teachers to interact directly. Although the School of the Air lessons and correspondence lessons did not coincide, those involved saw that the School of the Air lessons provided a way for up to 20 students of the same age to interact as they would in a classroom.

The correspondence system relied on fixed textbooks, often purchased at great cost, which ensured that the curriculum was rarely upgraded. Curriculum changes came about only when the required textbooks were no longer available from the publishers. Sometimes this meant that the learning materials and the skills, values, and attitudes being taught through them did not reflect the reality of the world in which the children would live. The parents also found that they could cope only with a limited range of subjects because they had no training for their role and had to rely upon their own, often limited, rural life experiences. The teaching methods tended to limit the education of the children. The centrally developed and delivered curriculum provided little opportunity for the materials to be modified or adapted to suit local conditions. Teachers located in Brisbane could not respond to the diversity dictated by local contexts, nor could the parents with their limited training in using the materials.

The Distance Education Paradigm

The Queensland government established a ministerial committee in the early 1980s to study the question of education by correspondence. This committee acknowledged the concerns many of the participants expressed. One of the major changes the committee recommended was to establish schools of distance education that would be strategically located throughout the state. The schools of

distance education would improve the interaction between teachers and students and provide greater opportunities for the curriculum to be modified or adapted to suit local conditions and the individual needs of the students.... The construction of the first schools at Long reach and Charters Towers in the late 1980s saw the first regionalisation of distance education.

The key elements of the distance education paradigm included:

- *the classroom*, which is located in the home where the parent (or governess) supervised the progress of one student or a small group of students; links with teachers in schools were provided by technology (for example, print and radio);.
- *the curriculum*, which was centrally designed and delivered and provided opportunities for students to cover all subject areas. The curriculum reflected the same expectations of what is “worthwhile knowledge” as for students in face-to-face situations. It provided exemplars around which the teachers in schools of distance education could plan their own programmes; and
- *the teacher*, who assumed the role of manager of student learning using both a centrally designed curriculum as a guide and the parent (or governess) as a tutor in the full sense of the word.

These changes constituted a fundamental change in the way in which isolated students received their education. No longer did they rely on “the papers” but could now see their teachers, hear them daily through high-frequency radio, and link each lesson to the learning materials in a more individualized way. On the surface, the role of the parent or governess had changed little with the introduction of the schools of distance education, but significant, more subtle differences had taken place. For example, because teachers had daily contact through the learning materials, they were able to adopt the role of guide and manager of teaching and learning. Teachers could offer a greater degree of individualised support for the home tutor as they got to know the needs and interests of their students.

One of the most important changes with the introduction of schools of distance education concerned the actual design of the centrally developed primary curriculum materials. No longer were they organised in a tight linear sequence. The new programme provided an integrated programme covering all subject areas, using a “whole language” and literature-based approach, including a wide selection of supporting texts to accompany the print materials. A range of audiovisual materials support the print materials. This change in the design of materials assumed a wider role for the parent. Where the parent or governess had been previously asked to supervise the work of students, the new materials required a greater tutoring role. This change placed an extra burden on teachers in the schools of distance education, who were required to direct both the student and the home tutor.

Not a great deal has been said of secondary distance education at this stage. To this point it was not an option taken up by isolated families because many parents felt they could not supervise students at the secondary level. Other families had preferred to send their children to urban boarding schools outside the state-funded system. Recently, because of the downturn in the rural economy and drought, more parents seem to be turning to secondary distance education programmes, which are offered by one school of distance education located in Brisbane. However, secondary enrolments in the other schools of distance education have also increased recently. The main concern with this development has been the difficulty in using the same delivery model (using home tutors) for secondary students.

The distance education paradigm includes a much wider range of students, from pre-school to adult, than did the correspondence model. It also provides some assistance to the few isolated students whose special needs allow them to remain in their homes without seeking continuous special attention in larger urban centres. Assistance is provided in two ways. A small, centrally located unit develops individual programmes for children who have been assessed as having moderate to severe learning disabilities. As well, each of the schools of distance education is staffed with “learning support” teachers who are responsible for assisting teachers and parents with programmes for students with learning disabilities.

Despite these developments, the members of the distance education paradigm have identified issues that suggest the presence of anomalous conditions. Perhaps a challenging paradigm is emerging.

In terms of Hughes’ curriculum framework the distance education paradigm recognises the social and epistemological changes occurring in Australia, but fails to address issues that concern the learner and the learning process, as follows.

- *Social:* Before 1950, Australia and particularly rural Queensland saw few migrants other than Anglo-Saxons. Only the Chinese miners made an impact in the bush, but most returned to China. People from the Pacific Islands who came to Queensland in the nineteenth century worked on coastal farms and did not penetrate the western Queensland towns.
- After 1950, Australia adopted large numbers of European migrants, who moved into the “outback”. By the 1980s, Asians came to Australia in increasing numbers and they, too, have had a major social impact.
- These social changes were not reflected in the updating of the Queensland correspondence materials of the 1950s and 1960s.
- The revision of distance education materials in the late 1980s recognised the multicultural factor in Australia and Queensland’s recent history. The recognition of other cultural values, including Aboriginal values, brought a modern view of the world to isolated students. The spread of television to the outback in the 1970s reinforced a new era in Queensland’s education system.
- *Knowledge:* Television, satellite communications, efficient news gathering, and broadcasting exponentially expanded the knowledge accessibly by children. Teaching became no longer a matter of drill and reciting known facts, but more an issue of how to find and manipulate relevant facts. Distance education recognised this complexity by adopting the literature-based, “whole language” approach. This move away from the certainties of knowledge in the correspondence system is a major source of concern to families accustomed to the former ways.
- *Learner:* Teacher who were preparing distance education materials in the late 1980s and early 1990s considered social and epistemological concerns, because they had been dealing with them in the everyday classroom settings from which they came.

Yet isolated learners brought pressure on these teachers to prepare materials in the “correspondence” mode, assuming the following:

- the dominance of the home tutor or governess role;
- infrequent contact with teachers; and
- a need for excessive and detailed instructions about using the materials.

- These “correspondence” assumptions depended on a stable environment of social and learning factors, but both had become fluid in the 1990s. As a result, the translation of 1990s classroom practice and social and epistemological understandings did not match the understanding of isolated learners.
- *Learning Process*: With a move away from the idea that students needed only a fixed *corpus* of knowledge came a range of “open” teaching techniques that emphasised recognising and classifying important content from the whole range of available information; data would then be manipulated to address the tasks to hand. This range of teaching techniques made the learning process much more complex than could be put into practice easily by unskilled home tutors or governess.

The schools of distance education link the “on-air” lessons and personal visits very closely to the written and audiovisual learning materials. Skilled teachers now play as great a role in the education of isolated students as teachers in the small schools that began to close in the early part of the twentieth century. It is unsurprising to find that parents and home tutors believe that modern distance education materials are too complex while, on the other hand, teachers find them too prescriptive.

The Open Learning Paradigm

Open learning at the school level has its origins in correspondence and distance education paradigms and to some extent, is an adaptation from tertiary and further education sectors. However, at the school level, the roots of open learning also extend back to the 1960s in the teaching and learning approaches associated with open education. Unfortunately, the development of any useful concepts from open education were lost as the idea, became confused with school architecture and classroom organisation.

Open learning is generally characterised as learner-centered education, with a focus on meeting the needs of the individual rather than accommodating the individual to the requirements of system or institution. It has been defined as a system “in which the restrictions placed on students are under constant review and removed wherever possible, it incorporates the widest range of teaching strategies in particular those using independent and individualised learning”.

In adopting this definition, a tentative list of “rules” can be offered around which it may be possible to develop concrete exemplars. These rules include the following:

- Open learning negates the constraints of place, time, and method.
- Open learning allows meaningful student choice.
- Open learning produces flexibility in materials and delivery.
- Open learning enables students to achieve their potential.
- Open learning provides ready access to a range of curriculum information and resources.

A paradigm emerges from these rules, but whether they are sufficiently strong enough to guide the practice of its members is debatable. A possible list of key elements could include:

- the “classroom”, which is generally located in the home, but links to “schools” are provided by communications technology (computer, fax, telephone);

- the curriculum, which is centrally designed and based on curriculum frameworks that reflect system-wide guidelines and expectations. The curriculum offers models of good practice around which teachers can plan their own programmes. Desirable characteristics of curriculum design will include the removal of barriers imposed by administrative convenience (for example, fixed duration courses and rigid divisions between levels of subjects) and the creation of multiple options (including recognising prior learning and matching delivery to the mode the learner prefers);
- the teacher, who manages the curriculum at the school level and decided on student needs, teaching methods, resources, and assessment; and
- “schools”, which are accessible all year round.

The open learning paradigm originated from elements of the correspondence and distance education models. The factors that caused the correspondence model to prove inadequate were a more fluid and multicultural society, the impact of the rate of change of knowledge, improved communications technologies, and better understanding of the learning process.

The distance education model is changing and moving towards an open learning approach because of the effect of factors that include the Education Department's acceptance of a social justice framework, demands by small schools for access to distance materials, the benefit that must be derived from distance materials that justify their high development costs, and a desire among parents for a more flexible learning model. As well, the education community's greater understanding of the meaning of *open learning* contributes to its greater acceptance.

Open learning has subsumed the simpler elements of correspondence learning such as the presentation of printed materials and has added a wide range of technological elements such as audio, video, and computer-based learning designed for isolated learners. The subsumption of distance education elements, including a more sophisticated understanding of the learning process and a more flexible approach to learning materials, are adding to open learning's capacity to respond to a wider range of teaching and learning situations.

The Open Access Support Centre is preparing its materials on the cusp of the change from distance education to open learning. It is because the Open Access Support Centre is pioneering this change that it is finding difficulty in coming to terms with a new way of “doing business” that not even educators and curriculum specialists within the broader Departmental community are able to provide insight or assistance.

ANALYSIS OF FACTORS

The preceding historical analysis shows that while the way education is offered to geographically isolated students has changed in several ways, one major paradigm of educational delivery in Queensland remains: it is that of the known curriculum delivered by trained teachers to students of similar age in a fixed place, the school.

The paradigm has within it some significant weaknesses in its basic assumptions, including the following:

- The presence of a teacher is necessary for the conduct of education.
- Students should be gathered together for purposes of learning.
- Students should follow a common curriculum..

- Students should be of similar age.

The historical analysis of the provision of education to students of all ages living in remote places has challenged some of the major assumptions of the dominant educational paradigm in the following ways.

- The removal of a teacher from the learning process in the correspondence school model showed that, under restricted circumstances, untrained parents and home tutors could successfully lead completely dependent (non-reading) students to become full independent learners, capable of digesting a whole range of syllabus material by reading and writing alone.
- The closure of small schools and the introduction of an itinerant teacher service, with very limited student contact time, showed that large education systems could successfully teach even one student in complete isolation from any other students, albeit with negative effects for the students socialisation.
- The tertiary open learning system has demonstrated that education, even in the regular absence of teachers, can prepare, produce, and deliver a very flexible curriculum to meet a wide range of student needs, particularly those of the independent learner.
- The significance of each point should not be lost on the dominant paradigm because either by acting singly or together, they have the capacity to change how schools operate. The following working examples elucidate these points:
- A wide range of subjects can be taught in schools where there is no teacher with the requisite training. For secondary education, this means that all students in the state have access to all subjects at any suitable time. Only a teacher or supervisor capable of giving general supervision to students is needed. Consequently, access to all subjects that suit a student's life goals need not be denied.
- It is possible to introduce the "home schooling" concept to almost any family that is willing to meet the necessary conditions, even if they suffer no disadvantage of isolation or distance.
- It is possible to allow adults of any age access to the normal curriculum to study subjects that they believe are necessary for their life goals using teaching techniques and materials prepared in a highly professional manner.
- The materials prepared in the open learning mode can be made commercially available to any person, system, or country that wishes to use them, provided they are constructed on themes and concepts, rather than around commercially prepared textbooks.
- Among the other significant factors to be managed during the period of change were:
 - the inclusion of the social justice issues that themselves provide a synthesis of elements within the open learning paradigm;
 - preparing parents, home tutors, and governance for a new approach, not only in the provision of learning materials, but also in new ways to tutor students;
 - incorporating features of suitable conventional school practices into the curriculum materials to make them useful in small schools, but without ignoring the role of the home tutor; and
 - complying with the industrial relations demands associated with restructuring a large educational unit of up to 250 staff.

SYNTHESIS OF ISSUES

Equity

Australian education systems subscribe to the principle that, in a society in which some groups are manifestly disadvantaged when it comes to enjoying the benefits education can bring, the disadvantage must be addressed. Queensland's schools strive to ensure equal opportunities for all students and equitable outcomes for identified groups of students. Special programmes exist for groups, including girls, Aboriginal and Torres Strait Islanders, students with disabilities, students living in remote areas, and those in low socio-economic places. Also the Queensland teacher transfer system ensures fairness not only for teachers but also for students in its methods of ensuring that all schools are staffed equitably. However, it is still the young and inexperienced who find themselves in remote or small schools.

Queensland is moving towards a schooling system that is based on self-managing principles. Within this approach there is significant scope for:

- a more sophisticated funding arrangement that allows schools to fund alternative forms of education to increase access; and
- a greater latitude for principals to access open learning techniques.

Where schools would be required to be more responsive to community needs, they must also have the capacity to access a greater range of learning options but, at the same time, be held more accountable for learning outcomes.

Participation

The principle of participation in schooling is universally accepted in Queensland schools. Rising retention rates, although affected by youth unemployment conditions, demonstrate the strength of participation in schooling. Schools may not always be able to respond to parent and community pressures to enhance subject offerings because of size, teacher mix, or experience and will, therefore, need to be more flexible in the approaches they use. Open learning is a strategy allowing for this type of flexibility.

The issue of participation is of particular significance to rural and remote schools because students have fewer employment opportunities and fewer role models on which to base their future employment or life options. Although the Department of Education does provide information to students on careers and, through its various policies, widens student horizons, some students are unable to study in areas they deem necessary for their futures.

Access

A key feature of Australian educational history is the states' provision of access to education for all children within designated age ranges, regardless of their background, location within the state, and any disability they may have. In other words, state schools are non-selective and attempt to provide a guarantee of access to any local school.

This principle of access subsumes the long-held Queensland belief that public education should be free, secular, and compulsory, since an education system that is neither free nor secular can deny access on financial and religious grounds.

These values are significantly different from the values that pertained during the correspondence school era. They recognise, as do the distance education materials, that people have different views of society and the place of knowledge within it.

Similarly, the learning process used in schools has changed to include greater curriculum flexibility, designed to serve the much wider range of career and learning choices now open to students.

At this time it is possible to detect the presence of anomalous conditions, a prerequisite, according to Immersion (1977), for a paradigm shift. This is evidenced by;

- the Department of Education's concern to extend ideas about social justice;
- requests from many conventional schools for access to the curriculum materials supplied to schools of distance education;
- difficulties experienced by some schools of distance education in using the materials for a more diverse student group (for example, students of travelling families);
- concerns expressed by some teachers about the level of prescription contained in curriculum materials; and
- an emerging issue being argued in the wider community is that the fundamental assumptions about the contemporary content of schooling (for example, a need for repeated retraining and increased personal responsibility for learning) call for a different mode of schooling that empowers learners and reduces dependency rather than the opposite.

The rigid curriculum framework associated with correspondence and distance education has been dissolved by open learning to serve a very wide range of student interests. Although a tertiary model might include almost any subject, a similar provision within a state-based primary and secondary model would operate within broad state guidelines or those established by relevant boards of studies.

CONCLUSION

In the analysis of the historical context, an attempt was made to show that the concept of open learning arose out of concerns and difficulties with the provision of education using correspondence or distance education modes. The formation of the Open Access Support Centre coincided with a proliferation of debate about distance education and open learning. At the same time, the Centre was completing curriculum projects spawned in different contexts.

It was at the Education Department's insistence the outdated materials were replaced. The Department accepted the distance education paradigm as an appropriate model to follow, because it improved access to modern learning by remote students. The distance education model fitted well within the overall Departmental position on curriculum development, which tended to be highly centralised at that time (1989).

Since 1989, with the adoption of the social justice principles of access, equity, and participation, the Open Access Support Centre has found itself caught between the distance education model and an open learning approach.

In essence, the difficulties that staff face in preparing curriculum materials (as opposed to creating administrative structures in times of difficult funding) arose from their role as pioneers of the open learning approach to curriculum development.

When the curriculum staff began to develop the learning materials without suitable exemplars for primary students, they found themselves being pulled in two directions:

- i) backward, towards the known methods associated with correspondence education; and
- ii) forward, towards the flexibilities of the open learning paradigm.

In terms of the curriculum model being used here, the strengths of the open learning system's social and epistemological concepts pulled against the correspondence model of the isolated learner and the learner's context.

With 20/20 vision in hindsight, it would have been better to develop a fully coherent curriculum theory and philosophy for preparing learning materials in the open learning mode before starting the task. Political and administrative realities combined with a naive approach ensured that while the Open Access Support Centre has delivered its goods on time, the exercise will have to be done again (in a more orderly way) to capture the realities of living and learning in the late twentieth century.

Clearly, the philosophy from which curriculum positions emanate must be understood before learning materials and teaching strategies are developed for non-traditional school-aged students. Because political and administrative demands have compelled the Open Access Support Centre to progress in advance of establishing its philosophical and curriculum positions, the Centre's materials, while of very high quality in themselves, reflect an outmoded curriculum model.

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QUESTIONS

School Education

- 1) What is the teaching support ratio in distance education schools in Queensland?
- 2) How is direct contact with the students possible?
- 3) What is the responsibility of the Regional Office?
- 4) What is the role of the teacher?
- 5) Explain the phrase 'open access'.
- 6) "The curriculum developers at the central level are keen to ensure that ..
- 7) What was the aim of the Hughes model?
- 8) Mention the key elements of the reigning paradigm of curriculum development.
- 9) Name the key elements of the correspondence paradigm of curriculum development.
- 10) According to the Hughes curriculum framework, what are the key inputs while introducing the correspondence system:
- 11) "In terms of Hughes' curriculum framework the distance education paradigm recognises the social and epistemological changes occurring in Australia but fails to address issues that concern the learner and the learning process"... name these issues.
- 12) Define open learning.
- 13) The open learning paradigm originated from elements of the _____ and _____.
- 14) Why did the education department accept the distance education paradigm as an appropriate model?

SUGGESTED ANSWERS

- 1) The ratio is 1:15
- 2) Direct contact with the students is possible through high-frequency radio, home visits, teleconferencing and computer links.
- 3) to provide staff and resources.
- 4) to control the pace of learning, to provide feedback to the students, to provide enrichment and remedial work, to assess the student progress.
- 5) 'Open access' does not imply the flexibility and autonomy of the learner as it is embraced by 'open learning'.
- 6) "...the distance education materials are perceived by teachers and parents as at least the equal of the curriculum provided in conventional schools."
- 7) Hughes developed a model to explain curriculum as developed in schools in Australia.
- 8) a) The teacher, who is central to the teaching-learning situation.
b) The students grouped in one place participating in the same learning experience at the same time, in the same manner and, in the same order.

Curriculum Development Experiences

- c) A common curricular, based on general acceptance of what constitutes “worthwhile knowledge” which will allow students to function as a community.
- 9) a) class room b) curriculum c) the teachers.
- 10) a) Social b) Knowledge c) Learners
d) Learning Process
- 11) a) Social b) Knowledge c) Learner
d) Learning process.
- 12) Open learning is system in which the restrictions placed on students are under constant review and removed wherever possible. It includes the widest range of teaching strategies, in particular those using independent and individualised learning
- 13) a) Correspondence b) distance education models.
- 14) The Education Department accepted the distance education paradigm as an appropriate model because it improved access to modern learning by remote students.



UNIT 3 TECHNICAL AND VOCATIONAL EDUCATION

Editor's Note:

Technical and vocational education through distance mode is the development of the eighties, and many universities and polytechnic, and more so industrial, government and private sectors provide technical and vocational education in a wide spectrum of skill-based and higher-degree oriented areas through open learning. The Open Learning Agency of UK, RMIT of Australia, Open Polytechnic of New Zealand and IGNOU are best examples of this.

In this unit we have chosen an article on “Developing Generic Work Skills through Distance Education” by Mark S Chambers, John C Clift, and Linda Sissions. The article was chosen because it discusses an experience of formulating a project on curriculum design and the development, implementation and evaluation of a programme in technical and vocational education. The authors have expressed their conviction that technical and vocational learning can be successfully imparted through distance education. They have first explained the need for imparting generic skills and thereafter given their suggestions as to the ways and means, and the steps needed, for developing generic skills among learners through distance education. The authors have referred to the changing socio-economic environment for technical education in this context, and have explained how in the area of technical and vocational education, there is a growing need to train students to perform specific jobs, towards preparing them to adapt to rapid changes in an uncertain professional environment. For this purpose, technical and vocational education now emphasises multi-skills training for the service sector rather than the traditional training for a specific trade career. The curriculum specialists are thus required to identify key emerging competencies which will be required by all citizens to enable them to perform life roles and to adapt to constant change. In this context, The Open Polytechnic of New Zealand (TOPNZ) decided to design the curriculum of its Bachelor's of Applied Science course in such a way that the learner develops generic skills at all levels of 'self management', 'conceptual skills' 'creative problem solving', 'holistic thinking', and self directed learning skills'. The basic consideration for the design and development of the courses was that students should not learn theory by rote but should be able to apply it in a new context. The earlier practice of structuring courses around theoretical knowledge was to be abandoned because education built upon the content' model did not produce graduates with skills as required in the workplace.

The first step in this project was to identify those generic skills which were needed to obtain evidence that a student had acquired the skills of self management, conceptual skills, creative problem solving, holistic thinking and self directive learning skills etc.

The second step was to implement the courses in a way that could be coherent in terms of course and programme design. Coherence was viewed at two levels viz. external coherence and internal coherence. External coherence implied the way an individual course complemented other courses to provide a meaningful programme, whereas internal coherence implied the way a course hung together internally by linking its content presentation and assessment framework with the learning outcomes. At this stage, programme-based learning was the principal strategy in the design of courses contributing to the degree.

The third step was to utilise formative and summative evaluation principles at appropriate stages in the curriculum transactions. For assessing generic skills, two

characteristics of assessment problems viz. their 'complexity' and their 'degree of structure' were taken into account. With regard to complexity, the amount of information needed to solve the problem and the level of uncertainty confronting the students with respect to the possible solutions or cues, were examined. As regards the problem of 'degree of structure', the complexity of the problem, the alternatives available for finding solutions to it and the cues indicating when an appropriate solution had been identified were analysed. The authors have presented the views of various experts, which have been suitably linked and quoted. The article as a whole provides the guidelines needed for those who wish to impart technical and vocational education through distance education, because TOPNZ is one of the 25 polytechnics of New Zealand imparting technical and vocational education through distance education.

Now read the article carefully and attempt to solve the questions given at the end.



DEVELOPING GENERIC WORK SKILLS THROUGH DISTANCE EDUCATION

—Mark S. Chamber, John C. Clift, Linda Sissions

INTRODUCTION

The Open Polytechnic of New Zealand (TOPNZ) is one of 25 polytechnics in New Zealand delivering tertiary education. It is a distance teaching institution offering nationally recognised qualifications from certificate to degree level. A substantial subset of the client population studies for diplomas and certificates targeted to clearly identified vocational fields.

A major theme in current employment literature is the call for graduates to have generic skills for use in a range of increasingly complex and dynamic life situations. This identified need in the workplace provided the focus for substantive debate within our institute culminating in the recommendation that, rather than develop a series of targeted degrees, TOPNZ should develop a 'generic' degree providing a ladder from existing vocational diplomas.

In September 1994 the New Zealand Qualifications Authority (NZQA) recommended that the proposed Bachelor of Applied Science programme of The Open Polytechnic be accredited with three discipline majors: Communication Studies, Environmental Studies, and Psychology. The first student enrolments will occur in 1995. Our student demographic analysis indicates between 50-60 per cent of the students will be in the age group 26-45 and in current employment. Their commitment to study will be part-time with career advancement as the primary motivational factor.

This paper describes the concepts underpinning the development of the generic component of the Bachelor of Applied Science. In the context of this degree, the use of the term 'applied science' denotes 'the systematic application of theoretical concepts and empirical evidence to real world situations.'

SOCIO-ECONOMIC CONTEXT FOR THE NEW DEGREE

There is a considerable body of evidence that vocational education systems throughout the world are shifting their emphasis from training students to perform specific jobs toward preparing learners to adapt to rapidly changing and uncertain professional environments. For example, the OECD report *Pathways for Learning* (1989) reported that in many countries technical education now emphasizes multi-skills training for the service sector rather than the traditional training for a specific trade career. Haworth (1992) describes this shift as a facet of a 'post-industrial revolution' which is driven by rapidly-evolving information technologies and the changed social organisations they produce. The 1991 US Department of Labor SCANS Report took a similar view, and identified the globalisation of business activities as a cause of uncertain future job needs.

Haworth contends that as a consequence of this 'post-industrial revolution', the supposed dichotomy between general and vocation education has ceased to exist. Rather, Haworth sees a set of key competencies emerging which will be required by all citizens to enable them to perform life-roles and to adapt to constant change. In this new environment, Haworth believes, discipline studies should be within a context that enables learners to be competent in their work. Other commentators such as Woditch (1977) have urged that what is wanted from the disciplines for the general education mission is their utility in developing student capabilities, rather than discipline integrity.

In New Zealand, Cooncy (1993), in relation to science graduates, averred that many current vocational degrees are too narrow in education they provide. For

example, he argues that while a targeted degree (e.g. B Telecommunications) may meet a current market demand, graduates will not be prepared for other work should the market for that specialisation diminish.

It was in this context that TOPNZ addressed the design of its B Applied Science. Our guiding principle is to foster in our learners the following generic skills at all levels: Self-management, conceptual skills, creative problem-solving, holistic thinking, self-directed learning skills and literacy.

CONSIDERATIONS FOR DESIGN

Broadening professional specialisms

The need to broaden the education offered in specific disciplines has been extensively documented (Lynton, 1991). Traditionally in New Zealand, core courses called 'add-ons' are intended to achieve a broadening of professional programmes by preparing learners to function efficiently as managers.

As Lynton notes, the 'add-on' approach is criticised because courses intended to broaden specialized curricula are targeted for specific vocations (e.g. Economics for Engineers'). For example, the skills required for economic decision-making are generic, and should be taught in a manner that enables engineers to communicate with economists (Chambers and Clift, 1994). Furthermore, the teaching of such add-on courses typically follows the theoretical approach characteristic of the courses of professional programmes. The result is that often the 'best students' can repeat theory learned by rote, but are unable to apply it in any new context. As Heyne (1993) has summarised it: The students' 'learning may have been comprehensive, but it has not been comprehending.'

Acquiring performance skills

Traditionally professional degrees have been structured on the premise that as students acquire more theoretical knowledge about a subject; they will become more competent to act as professionals in that discipline. However, the widely documented discontent of employers with the 'thinking' and 'transfer' skills of New Zealand graduates suggests that education built upon this 'content' model does not adequately produce graduates with the skills required in the workplace. Furthermore, students have long complained about the amount of information they are expected to learn, leading to 'reproductive' practices, rather than the opportunity to develop a deeper understanding of the material. The level of 'understanding' a person has about a subject is a function of how well they relate new knowledge to existing knowledge within their memory and so create interconnections. (Ausubel, 1968). It is this ability to create interconnections that enables people to think about potential applications in new contexts. People with such a level of understanding question facts and operations and come to recognise gaps in their knowledge.

Critical to the acquisition of higher level performance skills is the ability of a student to deep-process knowledge. The work of Biggs and Collis (1982) in researching teaching objectives built on levels of development in higher thinking, ('the SOLO taxonomy') indicates that students must learn how to engage in the deep processing of knowledge.

Generic course design

The importance of prior knowledge as prerequisite for meaningful learning and for the achievement of advanced level skills has been a consistent finding of research studies over many years (Marton, 1988). Heyne (1993) advocates, as the first step in motivating learners to value their courses, the presentation of a problem that is recognised by each student as 'meaningful'. Heyne urges teachers to draw on their students' prior knowledge and experience.

Our objectives for the generic component of the degree are to encourage students to 'seek meaning', and function through inferences drawn from experience or to 'subject ideas to a search for hidden possibilities'.

In structuring a generic degree using a wide range of building blocks including certificates and diplomas, it is essential that the degree exhibits 'coherence'. In terms of course and programme design, coherence can be viewed at two levels;

- 1) The way an individual course complements other courses in providing a meaningful programme ('external coherence') and
- 2) The way a course hangs together internally ('internal coherence'), by linking the content, presentation and assessment framework of a course with the learning outcomes (Hall, 1992).

Assessment principles

An interactive model of competency views the outcomes of learning as an interaction between the individual learner, his or her knowledge and beliefs, and the context in which the knowledge is applied (Hodkinson, 1992). For assessing generic skills, this interactive model was judged to be more useful than a model which assesses competency as a series of elements. Persuasive evidence indicates that elements taught as such do not add up to a whole; the desired competency is more than the sum of knowledge, understanding and context (Hodkinson, 1992).

Central to the TOPNZ application of this interactive model for assessing generic skills are two characteristics of assessment problems; their 'complexity' and their 'degree of structure'.

Assessment problems can vary in their complexity (i.e. the amount of information needed to solve a problem) and the level or uncertainty confronting the student with respect to possible solutions or cues as the correctness of any one solution.

Many problems formulated for students can be described as 'well-structured' (Simon, 1973); such problems contain all the information necessary for the student to achieve a solution. Snow (1980) describes the ability to solve such problems as 'crystallised intelligence' representing the skills to do well in a formal educational setting.

In contrast, 'fluid intelligence' is that which enables a person to succeed in the dynamic world outside of the educational setting. Problems demanding fluid intelligence are seldom 'well-structured'. Typically such problems are complex and, in Simon's phrase, 'ill-structured' (i.e. they lack certainty as to what is to be solved, the range of alternatives available for finding solutions and cues indicating when an appropriate solution has been identified).

The guiding principle for drafting assessment tasks within the degree programme is to present our students problems of progressive complexity and uncertainty which require a demonstration of increasing applications of fluid intelligence.

Problem-based learning

In developing our B Applied Science programme, we sought to adhere to Wittrock's dictum (1977) that:

...methods of teaching should be designed to stimulate students actively to construct meaning from their own experience rather than stimulating them to reproduce the knowledge of others.

A growing body of educational research indicates that Problem-based Learning (PBL) may be the most effective method of stimulating students to construct meaning from their own experience. (e.g. Vilkinas and Cartan, 1990). The basic

principle of PBL is to facilitate understanding by presenting learners with tasks which resemble those the learners will be confronted by their professional activities. (Rouse, 1990). Typically, such tasks will entail considerable uncertainty and permit many, (and in some instances, even diametrically opposed) 'valid' solutions.

In problem-based learning, understanding of a 'body of knowledge' is achieved through deriving solutions to a series of tasks of increasing complexity. The students are challenged to discover what information and theory as "tools of analysis" they will need to discover possible solutions such tasks (Heyne, 1993). A final task may inspire the student to 'reflect' on the process and solution(s).

Problem-based learning stands in considerable contrast to conventional subject-based learning, in which a student typically is required to read a chapter of text, is asked a series of questions about the material or given a very structured problem to solve using the set reading material. Such subject-based learning techniques are widely regarded as inadequate (Gibbs, 1991).

The dichotomy between subject-based learning and PBL is the 'difference between attempting to memorise the subject matter and attempting to understand and apply the knowledge' (Gibbs, 1991). The essential distinction is one of a quest for coherence versus knowledge-orientation on the part of the learner (Burns, et al., 1990). 'Coherence' is achieved when students achieve an appreciation for the order within a subject matter which they can use to understand the meanings of terms and causes of events. By contrast, a 'knowledge-orientation' is concerned with the memorisation of facts and rules which often can be easily tested in a superficial assessment of academic 'achievement'.

Gibbs (1991) has identified four features which foster a deep approach to learning:

- Intrinsic student motivation based on involvement in the selection process;
- Learner activity by planning, reflection and processing of information; Interaction with others to solve problems; and,
- Integration of new information into existing knowledge and experience to form a well-structured knowledge base. These features are characteristic of PBL techniques.

Ferrier (1990) responds to the commonly-implied criticism of PBL, in the form of the question as to whether students may miss important areas of knowledge, by pointing out that implicit in this question is the assumption that there are no gaps in the traditional curriculum. He concludes that the careful, integrated planning needed to support PBL can potentially minimize gaps and redundancies.

IMPLEMENTATION

Practice within courses

Problem-based learning is the principal strategy in the design of courses contributing to the degree. In all courses where generic skills are practiced, the formative assessment will focus on tasks such as reflection and expression of understanding of the influence of factors within a given situation, both in oral and written expression.

Summative assessment guidelines

Recognition of prior learning will be available to the students for all generic courses (Webb et al., 1993)

The criteria guiding summative assessment of our students follows the work of Eisner (1993):

- tasks used to assess skill and knowledge should reflect the tasks to be encountered in the workplace
- such tasks should reveal how a learner solves a problem rather than focus on the learners' solutions
- Assessment tasks should give students the opportunity to display their understanding of the connecting features of the concepts they have explored and have more than one acceptable solution.
- Task design should permit students to select a form of presentation to display what has been learnt.

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QUESTIONS

- 1) State the role of TOPNZ in one sentence.
- 2) What is the meaning of generic skill?
- 3) 'The proposed Bachelor of Applied Science Programme of the Open Polytechnic was accepted with three major disciplines'. Name them.....
- 4) What is the guiding principle of TOPNZ?
- 5) Mention the traditional name of 'core courses' in New Zealand.
- 6) How can performance skills be acquired?
- 7) Critical to the acquisition of higher level performance skills is the ability of a student to.....
- 8) What are the steps suggested by Heynus for motivating the learners?
- 9) What does the 'persuasive evidence' indicate?
- 10) Explain 'fluid intelligence'.

- 11) The basic principle of PBL is to.....
.....
.....
- 12) Haworth believes discipline studies should be
.....
.....

SUGGESTED ANSWERS

- 1) TOPNZ (The Open Polytechnic of New Zealand) is an institution offering nationally recognized certificates and degrees through distance teaching.
- 2) The word 'generic' means 'a genus', 'common to a whole group or class, 'not special', and skill means 'ability to do something expertly and well'.
- 3) Communication studies, Environmental studies and Psychology.
- 4) The guiding principle of TOPNZ is to train the learners in the generic skills of self management, conceptual skills, creative problem solving, holistic thinking, self-directed learning skills and literacy.
- 5) Add-on courses.
- 6) Performance skills can be acquired by relating new knowledge to existing knowledge within the memory and by creating interconnections.
- 7) Deep-process knowledge.
- 8) a) Teaching learners to value their courses b) The presentation of a 'meaningful' problem. c) Teachers ought to draw on their students' prior knowledge and experience.
- 9) Persuasive evidence indicates that elements taught as such do not add up to a whole. The desired and needed competency as essential as the sum of knowledge, understanding and context.
- 10) 'Fluid intelligence' makes a learner succeed in the changing world outside the educational setting.
- 11) Facilitate understanding by presenting learners with tasks which resemble those the learners will be confronted by in their professional activities.
- 12) Within a context that enables learners to be competent in their work.

UNIT 4 NON-FORMAL AND CONTINUING EDUCATION

Editors' Note

Education is more essential than almost any other possession in life. Every government is always serious about the educational policy of its country, since education creates human capital. Every body wants to acquire more and more knowledge. Education is also important for improving job prospects and for getting a better job. Non-formal and continuing education caters to this need of the learner. Through this mode of education a learner can earn and learn at the same time. The learner can learn at his/her own place and pace. Distance education supplements this mode of education and assists the learner in acquiring education at a distance. The planning of the curriculum needs special attention in this system of education. Curriculum is a dynamic aspect of educational theory and educational aims can only be achieved through a well designed curriculum, which means that different types of curricula are needed for programmes conducted under different modes of education. In the present article, the authors Khalipha M. Bilety and Johnson Odharo have designed a curriculum to improve health services through upgrading 'Enrolled Nurses' (EN) to 'Registered Nurses' (RN) through distance education; a good example of non-formal and continuing education.

The Distance Education Programme (DEP) model was proposed and adopted to reduce the cost and duration of the training of the nurses. The opening sentence of the article is very appealing and impressive. It explains the very nature of distance education. The authors then explain the goals of the programme and the interrelated units of DEP.

First, the article lays stress on human resources development by providing job training to the EN to become RN. Then the curriculum design and development is elaborated. This combines traditional classroom instruction and distance education. The curriculum is designed to create and increase interest among the learners and to get aid and help from all sections of the concerned departments of the government: Ministry of Health, Institute of Health Sciences, Ministry of Local Government, Lands and Housing, Ministry of Education, University of Botswana etc. The article presents the guidelines laid down for the planners of continuing education to plan a curriculum for the learners who are to be trained through distance education mode of teaching. The DEP for 'Improving Primary Health Care Service through Distance and Nursing Education Botswana' is meant for upgrading Enrolled Verses to the level of Registered Nurses. It is based on the interrelated units designed for distance education.

The curriculum for non-formal and continuing education should be a combination of traditional class-room instruction and distance education to enable the learners to learn at their won pace according to the available resources, due to the strain employment which they weight is under. The authors have suggested and have designed the curriculum to achieve better integration of clinical theory and practise needed for the training for upgrading the EN to RN. The programme involved the creation of a working environment essential for the effective combination of nursing education and services. For the development and successful implementation of the curriculum, the joint efforts of all the government and educational institutions are required. Secondly the goal of the curriculum was to train the nurses according to the required standards of training and knowledge, so it was divided into two parts: general course units and detailed blue prints for contact classes. This helped the nurses to have the comprehensive training needed. The curriculum included the production of study-material

Curriculum Development Experiences

according to the norms of the distance education mode. The study material was produced on the principles of Self Instructional Material (SIM) and was based on text books by writers established, as a part of curriculum, in the catchment area and residential tutorials were provided to the learners. The curriculum included all the components of learning required for technical programmes under non-formal and continuing education. Assessment was based on the upgrading of the students' performance. Along with assignments and practicals, there were also assessed tests for the award of certificates. The curriculum was designed on the basis of the needs of the learner.

Non-formal and continuing education through distance education provides an opportunity and a chance to professionals, technicians and officials to continue learning and to improve professional competence and betterment throughout their life span. Now, please read the article and appreciate the curriculum development, its implementation and the methods of evaluation in non-formal and continuing education.

Thereafter do attempt to answer the questions given at the end.



IMPROVING PRIMARY HEALTH CARE SERVICES THROUGH DISTANCE AND NURSING EDUCATION IN BOTSWANA

—Khalipha M. Bility, and Johnson Odha

INTRODUCTION

This paper examines a distance education model designed to improve primary health services through upgrading Enrolled Nurses to Registered Nurses. Preliminary feasibility studies conducted between 1985 and 1992 indicated that it is feasible to improve the quality of primary health care services, especially in the rural areas through upgrading ENs through distance education.

During the past decades, the Government of Botswana made considerable progress in expanding training programmes and access to quality health care services. Between 1975 and 1985 the capacity of hospitals, clinics, and health posts increased over 100 percent. Expansion of health facilities was unmatched by the output of training institutions. The resulting imbalances between demand and supply of nurses created the need to explore possible ways of expanding educational opportunities for nurses. In the current planned period (1972-1977), continuing education for nurses and other health care professionals was identified as a priority by the Government of Botswana. The target is the Enrolled Nurses (ENs) who constitute about 53% (1,433) of total nursing work force. Given the long and prohibitive cost of continuing nursing education, few upgrading programmes were established. For example, between 1985-1991 (NDP 7), 80 Enrolled Nurses (ENs) were upgraded to Registered Nurses (RNs) at the prohibitive cost of 9,440,000 Pula, resulting in a per student cost of 118,000 Pula. Under the present residential upgrading systems, it takes about ten years for an EN to complete a University degree in nursing education or administration at the University of Botswana. Consequently, few nurses benefit from this traditional upgrading programme

Distance Education Programme

The Distance Education Programme (DEP) model was proposed and adopted to reduce cost and duration of training ENs to RNs. Specific goals of the programme are to (a) improve the quality of health care services; (b) expand educational opportunities for enrolled nurses; (c) motivate nurses by improving the conditions of service; (d) improve access to quality nursing education; (e) develop the capacity of tutors to conduct research and organize training programmes to improve nursing practice; and (f) make nursing education cost-effective. The organization of DEP consists of five interrelated units:

- human resources development
- curriculum design, development and materials production
- education materials distribution
- academic services
- nurse-student support services.

Curriculum implementation strategies, such as, clinical instruction; mentorship; residential face-to-face tutorial; and study circles shall supplement text-based print modules. Examinations and assignments seek to test student mastery of relevant and appropriate body of knowledge and experiences in the social, basic and nursing sciences.

Programme Characteristics

Unlike the residential curriculum, distance education programme structures and organizes learning content into learnable self-instructional units or modules. This structure is unique in several respects; first it combines elements of traditional classroom instruction and distance education. Second, it enriches the reservoir of experiences among EN's as adult learners to develop a structured sequence of learning activities responsive to PHC strategies. This process allows for a better integration of clinical practice and theory. Third, the mentorship component of the programme creates a working environment essential for effective collaboration between nursing education and nursing services. This relationship between education and service seeks to maximize the relevance of education to the world of work.

Collaborating Institutions and Agencies

The DEP was designed in collaboration with Ministry of Health and Institutes of Health Sciences (HIS): (Gaborone, Molepolole, Labasto and Francistown); Ministry of Local Government Lands and Housing (MLGLH); Ministry of Education (MoE); University of Botswana (Centre for Continuing Education and Department of Nursing); and Kellogg Foundation, USA. The Ministry of Health (MoH) is the principal agency responsible for overall financing, administration, and management of all programme activities. The University of Botswana will accredit this distance education programme. The Center of Continuing Education of the University of Botswana provides technical and professional assistance for training and production of education materials. The Ministry of Education (MoE) shall provide technical support for programme development, and evaluation. The Distance Education Resource Centre (DERC), located at the Institute of Health Sciences in Serowe will be equipped with media, such as video, models, maps, overhead projectors, audio-visual materials, and other resources.

THE CURRICULUM

The goal of the curriculum is to prepare an EN to effectively and efficiently achieve standards of nursing care required of an RN. Inputs for the curriculum were obtained from a needs assessment of nursing services and content analysis of EN/midwifery and RN programmes. The output was used to develop a philosophy and a conceptual framework for the programme with embedded three elements of Primary Health Care (PHC) orientations: provision of services in community settings; provision of health care by a health team and appropriate integration of preventive, primitive, and curative services.

Layout of the Curriculum

The basic frame work of the curriculum consists of two levels of operation: general course units and detailed blueprint for content areas. Table 4.1 shows a summary of courses and time-frame.

Table 4.1: EN to RN upgrade courses

CONTENT AREA	TIME
(Theory and Practice)	
BASIC SCIENCES – 3 courses	
Anatomy and Physiology	80 hrs
Physics and Chemistry	60 hrs
Microbiology	30 hrs
NURSING SCIENCES – 9 courses	

Fundamentals of Nursing	30 hrs
Professionalism in Nursing	40 hrs
Care of Well and Sick Child	30 hrs
Care of Sick Adult/Medical	80 hrs
Care of Sick Adult/Surgical	80 hrs
Community Health Nursing	50 hrs
Nursing Management	44 hrs
Applied Research in Nursing	50 hrs
Mental Health Nursing	85 hrs
SOCIAL SCIENCES – 1 course	50 hrs

Each course unit shall be organized according to the following example:

- 1) *Topic Area* : Anatomy and Physiology of human cell.
- 2) *Objective* : Identify and describe functions of human cells and body tissues.
- 3) *Theory* : Study of the anatomy and physiology of human cells and body tissues with specific reference to health and disease processes.
- 4) *Clinical Practice* : Observation of the pathophysiology of body cells.
- 5) *Learning Activities* : Laboratory exercises, examinations of cells, models, tissues and review of modules.
- 6) *Evaluation* : Exercises using self-assessment format, clinical demonstration, multiple choice tests, short answer questions to state functions of cells and tissues in relation to health and disease processes.

Training

Short term and long-term strategies can be employed to maximize the contribution of existing staff. Training will be located in local and international institutions with a good track record in distance education, (for example, Nursing Times, University of South Africa, Open University). Study leave will be provided for staff designated for distance education to develop individual and institutional distance education capacity and facilitate the transfer of skills, knowledge and expertise.

Instructional Materials Development

All text-based instructional modules will be developed by the Curriculum Design and Writing Team. Workshops for training members of the team will involve writing instructional objectives, instructional design, editing, formatting of modules, and text production.

Curriculum implementation Strategies

The interface between theory and practice is adequately integrated by using five strategies which focus on didactic and clinical activities at appropriate times during the learning cycle, (1) clinical instruction jointly supervised by tutors and mentors; (2) text-based modules for self-instruction; (3) student study circle in specified catchment area; (4) mentoring and preceptorship; (5) residential tutorials.

Clinical Instructional Methods

The objectives of health care instruction are to (1) prepare each nurse to acquire the necessary competencies to manage clinical conditions requiring the application of nursing process; (2) to apply clinical knowledge to prevent disease, promote health and rehabilitate ill patients in hospitals, clinics, health posts, mobile stops and community settings. Clinical teaching will take place in a variety of settings: hospitals, clinics, health posts and communities. Each represents a different, yet equally important dimension of unique learning opportunities in keeping with the credos of PHC: access, quality, relevance, and appropriateness of care for individuals, families, and communities.

Each student will be required to complete four weeks of clinical rotations in the nine core nursing subject areas. Clinical rotations will run concurrently with assignments and reading of text-based self-instructional modules. Evaluation and supervision of clinical rotations will be conducted by mentors, in collaboration with clinical preceptors and tutors.

Mentorship

Closely integrated with clinical instruction is the mentorship component of the programme. Mentors serve as a link between the clinical teaching sites and the Institute of Health Sciences – Serowe. The goal of the mentorship programme in distance education is to create a framework of positive and beneficial interaction between student and nurse leaders. This interaction is likely to enhance the development of clinical skills of competent, efficient, and professional registered nurse. Each mentor is expected to perform many overlapping roles, including clinical preceptor, role model, and resource person. The mentor-student relationship prepares and socializes nurse-students into the role of RN.

Nurse leaders selected to serve as mentors will undergo an orientation and training programme for no less than one week. This orientation will involve: (1) extensive briefings on distance education programme; (2) clear outline of the characteristics, functions and responsibilities of mentors vis a vis students; (3) techniques for organizing student support services; and (4) clear outline of personal and professional support available for mentors to function effectively and deal with role conflicts.

Residential Tutorials

Residential tutorial is a mode of teaching and learning requiring that students travel to Institute of Health Sciences – Serowe once every two months to meet face-to-face with tutors, staff development fellows and programme administrators. While at the Institute, the students shall write exams, attend classes and participate in tutorial programmes.

Study Circle and Student Learning Centres

The study circle is the fourth component of the programme. The idea of a study circle is based on current practices in Botswana. In most communities, students engaged in corresponding courses meet periodically to review course materials. The study circle is not only an academic support group, but provides a base for social cohesion to groups of adult learners sharing a similar concern. The intention of the study circle is to bring together students living within close proximity of a catchment area to work on common problems and issues once a week.

Text-based Modules for Self-instruction

Independent study is the fifth component of the programme. The basic framework for the organization of the core curriculum is the modular system. The entire

package of learning material is designed to enable students to study and learn independently. Each module consists of unit goals and objectives, content, assignments, criteria for completion, assessment, self-test and study guides. Textual materials will be developed to sustain interest and motivation. Content will be sequenced in a manner that allows for systematic progression. Typically each unit will have a self-help study guide that explicates the progression to the subsequent unit.

Programme Implementation, Management and Administration

The success of distance education demands special administrative arrangements. Unlike residential programmes, distance education requires a relatively complex administrative setup, mainly because of the physical distance between students, tutors, and programme administrative units. The success or failure of distance education is highly dependent on the administrative and management set-up to ensure that programme quality and integrity is maintained five working teams will be instituted. These are (1) Project management; (2) Curriculum, design, development, and implementation, (3) Educational materials distribution, (4) Human resources and training; and (5) Academic and nurse-student support services. Members of these working teams will be derived from the programme core staff consisting of tutors, staff development fellows, research and curriculum officers, and support staff.

General academic policies

General academic policy pertains to admission requirements, student assessment strategies, the interface between groups of courses and examinations.

Admission Requirements

A student who applies for admission into this programme must meet the following requirements: (1) evidence of completion of enrolled nursing programmes; (2) proof of current registration with Nursing Council of Botswana; (3) evidence of current practice.

Continuous Assessment

Continuous assessment will be both formative and summative. Formative information will be used for improving student performance as well as supportive services. Summative information will be the basis for deciding if a student is to be selected, retained, promoted, and certified as a competent registered nurse.

Continuous assessment shall be the most important aspect of the overall assessment of student performance. Clinical observations, demonstration, role play, community assessment, and clinical presentations shall constitute part of the overall assessment. The intention is to document the students ability to process, analyze synthesize, and apply information to prevent disease, promote health and well-being.

In keeping with the accreditation requirements of the University of Botswana, there shall be a minimum of two (2) written assignments per course. Clinical practicum shall be evaluated as unsatisfactory, satisfactory, good, and excellent. Continuous assessment and final examination shall consist of the following ratio: 2:1.

Academic Progression:

To progress from Group A to Group B courses, a student must satisfactorily pass Group A courses and (a) attain a minimum mark of 50 in each course taken individually or (b) attain a minimum mark of 50 in courses taken together. Also, these criteria apply to the Final Examination. A student shall be permitted to

supplement a maximum of two courses in each group and allowed to repeat a course twice only.

Award of the Diploma

To be awarded a diploma a student shall be required to pass both Group A and B courses. The final mark shall be a simple average for Group A and Group B marks. The mark of the diploma shall be classified as follows:

Pass with distinction	80% and above
Pass with merit	70-79%
Pass with credit	60-69%
Pass	50-59%
Fail	49% and below

PROGRAMME EVALUATION

Programme evaluation is a complex, but essential activity undertaken to document the efficiency and effectiveness of all aspects of the DEP. Monitoring is adopted as the preferred model of distance education evaluation because monitoring strategies are readily adaptable to programme management. The overwhelming bias towards good management is particularly important, given the lack of experience among the staff in the management of distance education activities. This concern with management shall focus on six issues of what, where, how, why, who and when. What is the programme? How will the programme be implemented? Where and when will the programme be implemented? Programme supervision, as a monitoring strategy is designed to ensure efficiency of instructional delivery system, academic quality, and effectiveness of technical, professional, and support staff.

Data for monitoring programme inputs, process and outcomes should be reviewed against programme goals and objectives. The quality of inputs will impact programme processes as well as outputs. Data required for monitoring distance education can be conceived of as being related primarily to inputs, process and outcomes. Specific data source for programme evaluation includes student records, academic reports, programme implementation schedules, availability and utilization of resources and progress reports, among others.

CONCLUSION

Distance education provides an opportunity for professionals to continue learning and improve professional competence throughout the life-span. The curriculum emphasizes community orientation activities designed to develop a healthy balance between institutional and community care and to move nursing away from traditional and singular focus on nursing care activities, such as: one to one patient care; care from acute, chronic, ill and disabled individuals; and secondary and tertiary prevention. This integrated approach attempts to socialize the nurse-student in the process of primary health care, rather than focus on the application of nursing process to sick care.

REFERENCES

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- Ministry of Health (1992) Report of the Task Force on Kellogg Consultancy on Nursing Education System in Botswana. Gaborone, Botswana.

QUESTIONS

- 1) Why was the Distance Education Programme (DEP) model proposed and adopted?
- 2) Point out the specific goals of DEP.
- 3) The organisation of DEP consists of five interrelated units. Name them.
- 4) Mention the relevant curriculum implementation strategies.
- 5) The authors point out that the distance education programme structure is unique. How is this so?
- 6) Mention the role of the Ministry of Health and the University of Botswana in the working of DEP?
- 7) What is the goal of the curriculum of DEP model for ENs?
- 8) How will the training be provided?
- 9) How is the interface between theory and practice integrated?
- 10) Explain the function of the mentor.
- 11) What is the goal of the mentorship programme?
- 12) What is meant by a residential tutorial?
- 13) Why is there a study circle?
- 14) For the success of this programme, which five working teams were proposed?
- 15) Give the classification of marks of the diploma.

ANSWERS

- 1) The DEP model was proposed and adopted to reduce the cost and duration of training Enrolled Nurses (ENs) to be Registered Nurses (RNs).
- 2)
 - a) to improve the quality of health care services.
 - b) to expand the educational opportunities for ENs.
 - c) to motivate nurses by improving the conditions of service.
 - d) to improve access to quality nursing education.
 - e) to develop the capacity of tutors to carry on research.
 - f) to make nursing education cost effective.
- 3)
 - i) human resource development.
 - ii) curriculum design, development and material production.
 - iii) education materials distribution.
 - iv) academic services.
 - v) nurse-student support services.

- 4)
 - i) clinical instruction,
 - ii) mentorship.
 - iii) residential face to face tutorials.
 - iv) study circles
- 5)
 - i) It has the elements both of conventional class room instruction and of distance education.
 - ii) It provides for a reservoir of experience among ENs, as adult learners
 - iii) It creates a working environment needed for effective collaboration between nursing education and nursing services.
- 6) The Ministry of Health is responsible for the arrangement of finances, management and administration of all programme activities and the University of Botswana is to accredit this programme.
- 7) The goal of the curriculum is to prepare an EN to achieve the standard of nursing care required of an RN.
- 8) Training will be imparted in institutions with a good record in DE, the services of the existing staff will be utilized and study leave will be given to the staff designated for DE.
- 9)
 - i) clinical instructions jointly supervised by tutors and mentors.
 - ii) text based modules for self instruction.
 - iii) student study circle in the specified catchment area.
 - iv) mentoring and preceptorship.
 - v) residential tutorials.
- 10) The mentor is a link between clinical teaching and the Institute of Health Sciences – Serowe.
- 11) The goal of the mentorship programme is to provide a framework of positive and beneficial interaction between student and the nurse leader.
- 12) Residential tutorials require a student to travel to the Institute of Health Science once every two months for face-to-face interaction with tutors and programme administrators.
- 13) Study circle is to bring the students together to work on common problems and issues once a week.
- 14)
 - i) Project management.
 - ii) Curriculum, design, development and implementation.
 - iii) Distribution of educational materials.
 - iv) Human resources and training.
 - v) Academic and nurse-student support services.
- 15)
 - i) 80% and above Pass with distinction
 - ii) 70%-79% : Pass with merit
 - iii) 60%-69% : Pass with credit
 - iv) 50%-59% : Pass
 - v) 49% and below : Fail.

UNIT 5 MATERIALS PRODUCTION

Editors' Note

Curriculum development gives considerable importance to how the materials are developed and produced. There are a few methods/models available to us today. While the practice of assembling a small group of educationists, with experience of designing self-instructional materials, into a course team is widely practiced and well documented, in many instances this practice is not always possible, desirable nor even appropriate. In contrast to the course team approach, three alternative methods of material production termed Personalized Training, Workshop Generated and Text Transformation are described, illustrated and analyzed by Fred Lockwood in terms of the extent to which they do offer viable alternative methods of materials production. The experiences and case studies described by the author shall be extremely useful in designing and adopting appropriate methods of producing self-learning materials.

Lockwood, F. (1992) Alternative Methods of Materials Production, Media and Technology for Human Resource Development, 4(4), 223-238.



ALTERNATIVE METHODS OF MATERIALS PRODUCTION

—Fred Lockwood

INTRODUCTION

The last twenty years have witnessed an amazing growth in the use of distance learning materials. Self study courses, such as those offered by Wolsey Hall in the United Kingdom and other national correspondence colleges have been available for many years. However, the establishment of the United Kingdom Open University (UKOU) in 1969 marked a significant point in the use of self instructional material for adults and in the methods of materials production. Many other national Open Universities have been established (Reddy, 1988) with the growth of several of them likely to be spectacular. For example, it has been estimated (Miller, 1989) that the Indira Gandhi National Open University (IGNOU), India will ultimately enroll 700,000 students. The Sukhothai Thammarath Open University (STOU) in Thailand was expected to have 500,000 students by 1990 (Daniel, 1988) and the Radio and Television Universities of China (RTVU) 1,300,000 by 1990 (Hawkrige, 1988). The growth of these, and other Open Universities, is not just in terms of the number of students but in the number and range of courses the institutions must produce.

For many Open Universities and Institutions of Higher Education, the method of materials production has been influenced by the course team practice developed by the UKOU and described by one of its founder members (Lewis, 1971, 1971 a, 1971 b). This practice of assembling a small group of educationalists, with experience of designing self-instructional materials, is widely practiced and documented. However, in many instances this practice is not always possible, desirable nor even appropriate. In contrast to the course team approach, three alternative models of course production termed Personalised Training, Workshop Generated and Text Transformation are described, illustrated and analysed in terms of the extent to which they do offer viable alternative methods of materials production. Whilst it is possible for elements of all three models to be incorporated into a particular production process, they are discussed separately so as to focus upon their individual features.

PERSONALISED TRAINING

Personalised Training is designed to equip authors with those skills and techniques they need to deploy when planning and producing self-instructional material at that moment in time when they need them. Unlike those models that emphasise a front-end loading principle, where the skills and techniques are conveyed at the outset, this approach conveys only those that are needed for individuals to progress to the next stage in process. The critical importance of the timing of a device and assistance was evident in reviews of previous training activities undertaken by the UKOU.

In an attempt to provide individuals with advice and assistance on materials production, the UKOU assembled and published a self-instructional course on how to plan, produce and present self-instructional course; it was called P517 Making Self-Instructional Material for Adults (Open University, 1985). This multimedia package specified the stages through which any materials were likely to progress and proceeded to illustrate how self-instructional materials could be devised; it was accompanied by 10 days of seminars and workshops. The format was to commence the process of materials production with a 5-day programme of seminars and workshops on planning and production issues after which individuals would have an unspecified period in which to generate draft material. At a convenient time a second 5-day programme on production and presentation

issues would be conducted. The belief was that momentum created by the first series of seminars and workshops, sustained by the provision of the multimedia package and reinforced by the second series of seminars and workshops, would provide sufficient training for authors.

However, subsequent enquiries within those institutions and groups that had purchased copies of P517 (and who had received the same series of workshops and seminars) revealed, not surprisingly, a variety of factors had influenced the success of their respective projects. Further consideration of these factors revealed the critical importance of three of them: coordination and management of the project, adherence to the production schedule and ongoing advice and assistance to authors.

The first was the need for a person to coordinate the administrative aspects of the whole project and fulfill a management role. Without such a person, individuals either duplicated tasks which added to their overall workload, slowing progress and dissipating effort or overlooked tasks which eventually proved to have major production implications. The second was the need to formulate and agree a realistic production schedule for all contributors and their components. Slippage in one part of schedule invariability has knock-on effects for others which eventually raise questions of financial support and viability of the project. The third, which is inextricably linked to the previous two, is the need for on-going advice and assistance to authors. It appeared that many authors, working in isolation, became preoccupied with a particular problem or aspects of materials production which brought progress to an abrupt halt. When advice and assistance was readily available these problems were resolved with little loss of momentum and enthusiasm. When the problems were left they appeared to grow in importance to the detriment of the whole project.

For example, the production of a multimedia package designed to up-grade primary school teachers in Hong Kong (Grantham College of Education, 1989) was fortunate to have a staff member who not only took academic and administrative responsibility for the whole project, and ensured the schedule was maintained, but also facilitated the provision of advice and assistance to individual authors. In contrast, the production of various undergraduate modules within the Chinese Radio and Television Universities (Lockwood, Fames and Marr, 1989) was not coordinated, did not operate within an agreed schedule and failed to provide on-going support to authors; the initially proposed self-instructional packages have not been assembled. A similar pattern was observed within those British institutions that had purchased P157 and completed the programme of seminars and workshops.

When the UKOU was asked to provide training for members of the National Association of Clinical Tutors (NACT), who were planning to assemble a self-instructional training package for Clinical Tutors; the appropriateness of the previous methods was questioned. (Clinical Tutors are those senior medical staff who provided the postgraduate medical education for hospital doctors.) Rather than group all the training seminars and workshops into two programmes and leave participants to coordinate the project to their own schedule, a personalised form of training was devised. It involved constituting a small task group, devising a realistic schedule in which a member of the UKOU would not only coordinate the whole project but who would provide the personalised training that was necessary for materials production.

A task group of six individuals was assembled. It consisted of four medical representatives who had considerable experience as Clinical Tutors but none of writing self-instructional material, (these doctors agreed to contribute to the project at the same time as they fulfilled their normal medical and clinical roles in hospital), an educational technologist from the UKOU who had considerable

experience of producing self-instructional material, but who did not have a medical background, and a representative from the Joint Centre for Educational Research and Development in Medicine to advise the group and to provide liaison with the Department of Health who were financially supporting the project. The educational technologist was to act as Task Group coordinator, administrator and be responsible for briefing and training; the four medical representatives were to draft the training material. A detailed course schedule was devised for the production of the training package. It specified the dates of all Task Group meetings, the period allowed for materials production, deadlines as well as the turn round time for the circulation of materials if everyone was to be informed prior to the following meeting. On the basis of previous experience of designing similar self-instructional material, and advising and assisting other authors, a series of briefing and training workshops were devised and conducted at the time of course team meetings. They were designed to equip team members with the skills and techniques they needed to complete current tasks. A telephone hot line was instituted for any author in need of immediate advice or assistance; it was used infrequently.

This method of material production may be attractive when small budget is available for the task in hand, a short production schedule is envisaged and the training investment in the authors is judged to be worthwhile. The NACT Training Package (National Association in Clinical Tutors, 1990) was assembled on schedule, within the budget and met the training needs that had been identified. The exercise demonstrated that it was possible for a small group of medical specialists, with no previous experience of writing self-instructional material, to be equipped with the necessary skills and techniques at the same time that materials were being produced. The product of the exercise was not only a training package but specialist medical staff who had acquired valuable additional writing skills to be used in other projects at some future time.

WORKSHOP GENERATED

When appropriate teaching material is not available, or doubt is expressed as to its existence, *it can be readily generated in a workshop context by subject matter specialists*. A group of specialist educators, with a specific goal and product in mind, working with a limited timescale and budget can pool their experience and expertise to generate a set of teaching materials that would be beyond the resources of a single person. This method of materials production does have similarities with that of course team production in that it embodies a collective responsibility to the input but differs in the speed by which materials are generated and the roles of the subject matter specialists and editor in the project.

The appropriateness of a *Workshop Generated* process of materials production is illustrated by the production of the medical training material 'Standards in Rheumatology' (The Medicine Group, 1987) and 'Seeking Standards in Practice - Coronary Heart Disease Prevention in Primary Care'. The North of England Faculty of the Royal College of General Practitioners became increasingly aware of the need for guidelines for standards in General Practitioners (GPs). (It was noted that relatively little time is devoted to such problems in medical school and yet pains in the arm, knee and back are amongst the most common in general practice.) The solution was to organise a residential weekend in which three groups of GPs worked concurrently, in a workshop format, in generating three parts of the training material which would constitute the 'standards in care'. Their task was to formulate a set of guidelines by which GPs could institute high and consistent standards in care, in particular to consider:

- how to recognise the presenting problem;
- how to examine the patient;

- what questions to ask in order to make diagnosis, wherever possible;
- how to develop the most appropriate personalized management plan for individual patients;
- how to make rational use of all the available resources;
- how to aid the patient by making optimum use of medical and non-medical services; and
- what follow-up and aftercare could be necessary” (The Medicine Group, 1987: 1).

The resultant training booklet, assembled by a medical writer, has been widely distributed and found to be a valuable source of advice in setting standards of care in rheumatology. Indeed, the success of the initiative persuaded The Medicine Group to employ the same materials production model in a subsequent project when a small group of medical specialists including GPs, a Practice Nurse, a Practice Manager, Medical Educationalists and Medical Writers (editors) met over a weekend to generate a training module entitled “Seeking Standards in Practice - Coronary Heart Disease Prevention in Primary Care”. Workshop participants attended the weekend workshop and contributed those outlines they had prepared in response to their brief and generated others. Not only were detailed notes taken during the group discussion, with a tape recorded account made for subsequent review, but summaries of discussion points were agreed and recorded. The intention was to pool the experience and expertise of all the participants and to create a composite of their knowledge. The materials generated included evidence as to the scale of the problem, practical management procedures, examples of protocols, worthwhile tasks or activities for the primary care team to undertake and sources of information for advice and assistance. The outcome was a resource pack containing a self-instructional booklet of core training material, a series of ‘activities’ presenting a series of worthwhile talks to be undertaken prior to the institution of :1 Coronary Heart Disease Clinic, and ‘resources’ which provided refere; materials or information on how to obtain them.

Workshop Generated model, as a method of materials production, has two attractive features. The first is that it can be obtained extremely quickly. The actual process can be accomplished in hours even through planning the workshop, coordinating the input of participants and following up the suggestions and sources made by participants may take several weeks. Whilst the task of the medical writer (editor), to present the pooled information, has similarities to that of an author in a course team, it is completed in days and weeks rather than months and years. The second is that it creates a collaborative rather than competitive environment, asking practitioners to share their experience, skills and abilities with others, acknowledge their worth and place them in a context where they feel valued. If the context also provides an opportunity for participants to benefit from the experience, skills and abilities contributed by others - to create a resource for the mutual benefit for colleagues, it fosters a collaborative rather than competitive working environment. It exploits the strengths and expertise of individual contributors with others responsible for representing the information in a communicable form. It does, however, place a major emphasis upon detailed prior planning, the allocation of briefs and operation of the workshop to a tight schedule and with a particular product in mind.

TEXT TRANSFORMATION

When materials are already in existence, but are considered to be inadequate for their intended purpose, *they can be transformed into high quality distance teaching materials* by the process of Text Transformation. This process differs

fundamentally from the course team process, mentioned earlier, in which a course team typically commences with the specification of broad aims, refines them over a period of time into detailed objectives as contributors move towards a consensus and the final product. In the course team process authors typically remain responsible for their own material and its development. In contrast the Text Transformation process typically starts with materials that have been developed to the extent of authors' ability. The task, through a process of negotiation, is to determine the degree of change that would be acceptable to the commissioning body and to differentiate between those changes that are desirable and those that are feasible; either within the time scale or due to possible acceptance by original authors. The attributes needed by the transformer, a skilled professional communicator who mediates between author and reader, have been identified and described (MacDonald-Ross and Waller, 1976). The transformers distinguished between the content of the message emerging from the author and the form it should take if it was to communicate efficiently. Their initial work and ideas influenced many course developers, one of whom was discussed the role of the transformer, and provided guidelines for the task and examples of the process (Melton, 1990). Melton provides a checklist and proceeds to describe and illustrate how a whole course might be transformed – focusing on the broad aims of the course, the characteristics of the learner as well as the teaching strategies and methods of presentation to be deployed.

An example of Text Transformation, that closely resembles the procedures outlined by Melton, is provided by the Population Training programme (POPTRAN) that was originally developed within the Cardiff University Population Centre, Great Britain in the mid 1980s. POPTRAN was originally a Computer Assisted Learning (CAL) package designed to help users understand more about population statistics and dynamics. It consisted of a series of nine computer simulations of population representations (on disk) and three substantial printed manuals designed to help users explore nearly 200 national populations according to certain parameters. However, prior to publication, funding bodies questioned its adequacy for its intended purposes. A subsequent review of the package suggested that a range of potential changes, from minor to major, could be achieved through the process of text transformation.

The POPTRAN package was dominated by three formidable printed manuals which users, unfamiliar with microcomputers and CAL (for whom English could be a second language), could find extremely daunting. Minor changes included the removal of textual duplication, reduction in the number of examples and relocation of technical material to appendices. Moderate changes included the redesign of certain computer graphics, eliminating examples of the computer being used as an electronic page turner rather than a machine that could store, retrieve and provide dynamic population displays and sequencing of the computer programmes. Major changes involved a complete re-conceptualisation of how POPTRAN could be used as a self-instructional package; there was confusion between its status as a package that was self-contained, complete in it and one that was dependent upon teacher mediation. It was argued that this range of changes could make substantial improvements to the teaching effectiveness of the POPTRAN package.

The CAL package, that had taken seven years to develop, was subsequently transformed into an Introduction and Guide to POPTRAN, a series of nine computer programmes and corresponding Self-instruction Guides and a Technical Manual in a period of six months. Sections of the package were 'mocked up' and piloted in realistic contexts with its overall effectiveness evaluated in field trials (Henderson, Kinzett and Lockwood, 1988).

The task of the transformer has similarities with that of the editor described above. Both play a central, influential role in assembling the academic material generated by others. However, whilst the transformer typically has had no part in assembling the material, the editor may often be heavily involved. Furthermore, it would be far too limiting to regard Text Transformation as only a remedial activity; one to salvage existing material. An advantage of this process, it is argued (Lewis and Paine, 1986; Rogers, 1987), is that existing material can be adapted for different teaching purposes and even different audiences. In contrast, Workshop Generated materials are typical, dedicated to a particular audience.

CONCLUDING COMMENTS

Each of the above methods of materials production have been successfully applied. The key question was to decide which of the methods was possible, desirable and appropriate. The decision is influenced by a number of factors: the stage of materials development, the writing abilities of authors, decision regarding investments in author training and over what period as well as the skill of prospective course team chairperson, workshop presenter or text transformer.

Given sufficient advance notice, all the three methods are possible, although invariably production deadline are a deciding factor. A major distinction between the process of developing texts (see Rowntree, 1990) and transforming them (see MacDonald-Ross and Waller, 1976) is the investment that one wishes to make in original authors. If it is unlikely that the author of prospective teaching materials will be involved in similar activities in the future it may not be cost-effective to invest considerable time, effort and funds in the process; utilising an experienced transformer may be more appropriate. The availability of specialists may also dictate the method adopted. Contributing to a weekend workshop may be feasible whilst a commitment to a production schedule may not. Needless to say, a skilled individual could probably operate all the three methods, and combinations of them, successfully.

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UNIT 6 MEDIA AND ICT IN TEACHING LEARNING: IGNOU EXPERIENCES

Editorial Note:

Media and ICT has emerged as a powerful tool in teaching learning, this is more so in the distance education. Generally the ODL can be defined as “any meaningful communication is education. If it is written or produced in multi/multiple media, it is called Open and Distance Education” (Dr. Rampelli Satyanarayana).

This article on Media and ICTs in Teaching Learning in IGNOU: Experiences is a shared view of existing practices of media and ICT issues focusing on the teaching learning in general and IGNOU experiences in particular. Ms. Sujata Santosh has made an attempt to focus on the existing media and ICT usage in Indira Gandhi National Open University. The article also covers extensively role and importance of media and education in developing countries. The author has also discussed issues of national level policy initiatives and provision for the use of ICT in education in India. She has extensively dealt with various media provisions available in teaching learning in general and specific to educational media and ICT in IGNOU. The author explains audio video and interactive radio and various television channels available at IGNOU. She had also explained the virtual classroom network, IGNOU’s eGyankosh (presumed to be understood as OER), the collaborative Youtube facility flexi learning platforms, education broadcasting, online learning initiatives, globalising attempts such as Pan-African e-Network Project, National Knowledge Network, Sakshat Portal, Distance Education Programmes (DEP-SSA), Rajiv Gandhi Project and IGNOU initial OER policies. A reading of this unit will help the learners to appreciate the media and ICT infrastructure facilities available at IGNOU. By studying inferences based on IGNOU practices, one can explore media and ICT policies for distance education institutions. The whole debate may sensitise the learners upon the issues of media and ICT choices in teaching learning in the developing countries like India. While taking a policy decision, the choice before the policy makers many times is to use minimum technologies for maximum uses or maximum technology for maximum or minimum usages. However the policy choice is always important to evolve an effective media viability according to each institution’s relevance, context, purpose, cost, time and ultimately the media ICT policies which must be fittest to the each institution’s purpose. This is otherwise called quality in education lastly, it is well said that Media and E-Learning is not a religion to search but it is one of the most powerful tool to practice. As much one practice so much one gets familise with media and ICT.

Abstract: The learning environments of today are gradually being transformed by the use of Media ICTs and the use of multimedia technologies has become a vital component of the teaching learning process. The extensive use of multimedia in education depicts the convergence of the developing computing technology and internet technology leading to an enriched teaching learning process. Educational multimedia systems endeavor to make learning easier, more convenient, and thus more effective. Radio and Television have been used to deliver innovative educational content as they have a wider reach. At present there are dedicated educational channels on TV such as GyanDarshan I, II, and on the Radio such as Gyanvani. Though delivery of education through TV and radio however has limited interactivity and lacks flexibility. The Electronic Media Production Centre (EMPC) of Indira Gandhi National Open University (IGNOU) has emerged as a major hub for the use of electronic and broadcast media in distance education.

In the country, a number of initiatives aimed at promoting the use of ICT have been taken up. According to World Bank report almost all the states in the country are implementing central schemes such as ICT @ Schools, SSA, Mission on Education through ICT and have significant number of students enrolled in open learning systems at the school and college levels. There is a diffusion of ICTs in Indian Universities and colleges to meet the educational requirements of today. Indira Gandhi National Open University (IGNOU), a leader in the field of ODL, has adopted a multimedia approach for reaching out to its learners. Different communication technologies are used in IGNOU's instructional system though with technological developments over time there have been significant changes in the use of different media. The instructional packages for learners include self-instructional print and audio/video materials, radio and television broadcasts, interactive radio counselling, face-to-face counseling, laboratory and hands-on experience, teleconferencing, videoconferencing, CD-ROMs, and Web-based content delivery. IGNOU has taken certain major initiatives towards the development of interactive multimedia content and learner support through web-based platforms for the distance learners.



MEDIA AND ICT IN TEACHING LEARNING: IGNOU EXPERIENCES

—Sujata Santosh

Introduction

The learning environments of today are gradually being transformed by the use of Media ICTs and the use of multimedia technologies has become a vital component of the teaching learning process. ODL systems of today are marked by advancements such as eLearning, online student support, digital repositories and open source courseware. Indira Gandhi National Open University (IGNOU) has contributed significantly to the development of higher education in India through the open and distance learning (ODL) mode. IGNOU has emerged as the largest university in the democratic world, providing quality higher education opportunities to the unreached through its wide range of programmes. It serves the educational aspirations of around 2.8 million students in India and 32 other countries. IGNOU has adopted a multimedia approach for reaching out to its learners. IGNOU's instructional system involves integrated use of different communication technologies and media to provide access and opportunities to its varied learners. The instructional multimedia packages provided to the learners include a wide spectrum of technologies from print to audio-video programmes, broadcasting, interactive radio counselling, teleconferencing, CD-ROMs, and Web-based content delivery. This paper discusses the initiatives and practices taken up at IGNOU towards the use of ICT in teaching and learning. Dedicated educational channels on TV such as GyanDarshan I, II, and on the Radio such as Gyanvani are being used to deliver innovative educational content. The Electronic Media Production Centre (EMPC) of Indira Gandhi National Open University (IGNOU) has emerged as a major hub for the use of electronic and broadcast media in distance education.

ICT is being increasingly used in the developing countries. In India also, the policy framework has laid immense stress on the overall importance of using ICT for promoting and improving education. The paper presents use of ICT and the related policies in India and other developing countries. A large number of meaningful initiatives aimed at promoting the use of ICT at all levels of education are also presented.

Role and Importance of Multimedia in Education

Multimedia has become an integral part of educational environments. Advances in technology have enhanced the use of multimedia in teaching learning, and this use seems to be set for continued expansion in future also. Multimedia has proved to be an effective learning aid. It has offered new ways in which learning can happen. Use of multimedia in ODL systems enables in providing a student centered learning environment which is customized according to the learner's educational requirements. The use of multimedia in education has influenced and changed the delivery mechanisms and content of education in the educational systems. This has also created opportunities for improving access, quality and efficiency of education at all levels.

Developments in technology provided new means of instruction. First radio then TV was used extensively as teaching aid. Then computers came to be used for instruction. Devices such as tape recorders and video camera are also used extensively in teaching and learning for students to record their own activities. The extensive use of multimedia in education depicts the convergence of the developing computing technology and internet technology leading to an enriched teaching learning process. Multimedia is a concept that emerged in the 1950s and commonly referred to a method that combines at least two media formats such

as text and video or audio at one time to derive a more complete, not necessarily educational, effect (Heinich, Molenda, Russel, & Smaldino, 1996). Multimedia use grew rapidly during the late 1980s and 1990s due to improved technologies that allowed better compression, better graphics accelerators, faster chips, and two or three dimensional images with a variety of file formats and faster connections online (Jalobeanu, 2003).

Multimedia can be defined as an integration of multiple media elements (audio, video, graphics, text, animation etc.) into one synergetic and symbiotic whole that results in more benefits for the end user than any one of the media element can provide individually (Reddi & Mishra, 2003). The term is now firmly associated with computer-based delivery, usually over the Internet and accompanied and supported by interaction provided via some form of Computer Mediated Communication (CMC) (Fahy, 2005). Roblyer and Schwier (2003) defined multimedia as “A computer system or computer system product that incorporates text, sound, pictures/graphics, and/or audio”. Multimedia is also interactive; it enables both the student and the teacher to control the content flow of information (Vaughan, 1998).

The use of multimedia technologies in educational institutions is seen as necessary for keeping education relevant to the 21st Century (Selwyn & Gordard, 2003). Educational multimedia systems promise to make learning easier, more convenient, and thus more effective. For example, classroom teaching enriched by vivid presentations promise to improve the motivation of the learner. Concepts may be given a perceivable existence in a video show and important details can be stressed. Video capturing of lectures has become common practice to produce distance education content directly from the classroom. Simulations allow learners to explore experiments which would be otherwise impossible to be conducted physically.

The pedagogical basis for the use of educational multimedia technologies has perhaps been the greatest driving force for the massive investments made by educational institutions into multimedia technologies. Certain factors such as pedagogies, skill of teachers, adoption patterns are crucial for effective use of multimedia in education. The integration of multimedia technologies will lead to a transformation of pedagogy from traditional instructivist teacher-centered approaches to the more desirable constructivist learner approaches that are seen as embodying essential characteristics of more effective learning environments (Tearle, Dillon, & Davis, 1999; Relan & Gillani, 1997; LeFoe, 1998; Richards & Nason, 1999). The potential of multimedia technologies to reshape learning contexts (Relan & Gillani, 1997; Lefoe, 1998) will only be realized by informed pedagogical decision making and the formulation of teaching strategies designed to exploit multimedia technologies within the curriculum context.

Multimedia is increasingly being used in open and distance educational systems. Universities and educational institutes are embracing multimedia technology. New sources of education and training with integral multimedia components are appearing every day. Internet has emerged into a space for networking and knowledge sharing, thus enabling creation, sharing and reuse of educational content. Web based programmes and information systems providing easy access to remote learners have become distinguishing features of open and distance learning environments. Various initiatives taken up at the national level are mentioned in detail the following sections.

Use of Media ICTs in Education in Developing Countries

Interest in the use of ICTs for education has grown steadily over the past decade in almost all the developing countries. This has led to a larger emphasis on policy development. Most of the governments in developing countries have drafted

or approved ICT policies in education. In India also, the policy framework has laid immense stress on the overall importance of using ICT for promoting and improving education. A large number of initiatives have been taken in various developing countries for encouraging and facilitating the use of media ICTs in education.

In most of the developing countries there is relatively high penetration of mobile phones, radio and TV. Innovative efforts are also being made to use mobile technology for education. There is an increased interest in providing low-cost computing devices — laptops, PCs, mobile phones, and PDAs— to schools in developing countries. However, according to World Bank, the use of ICTs in education in many developing countries, especially the “poorest of the poor,” is associated with high cost and potential failure. Limited resources, poor infrastructure, weak implementation capacity of the government, lack of quality content in local languages, poorly trained teachers, inadequate monitoring and evaluation strategies are some of the constraints faced by these countries (Kelly, 2010).

In countries such as India, Pakistan, Maldives, Bhutan, Sri Lanka, and Afghanistan there is a policy framework related to the use of ICT in education. Bangladesh does not have any distinct ICT in education policy and the use of ICT has largely been in the non formal and continuing education sector. In Nepal the IT Policy primarily focuses on building a knowledge-based society and making ICT facilities available to the public. India has clear policies pertaining to the use of ICT in education. In Pakistan, the policy framework focuses on strengthening the ICT infrastructure in schools and educational institutions. There is a greater focus on the incorporation of ICT as a subject in the curriculum than on using ICT as an instructional aid for improving the quality of education.

Numerous initiatives involving innovative applications of ICT in distance education strategies have also been taken up. Open and Distance learning systems are well established in almost all the South Asian countries. *Indira Gandhi National Open University* and the *National Institute of Open Schooling* in India, *Allama Iqbal Open University* and *Virtual University* in Pakistan, *Bangladesh Open University*, and *Sri Lanka Open University* are some of the examples. These systems promote mass education using traditional print, as well as video and radio based instructional materials. With the availability of new technologies these systems have begun to utilize the internet, CD ROM, video conferencing and other multimedia tools. There are dedicated educational TV channels such as *Gyan Darshan I & II* in India, *Nenasa* in Sri Lanka. Radio (*Gyan Vani* in India) and community radio (*Radio Sagarmatha* in Nepal, *Radio Kothmale* in Sri Lanka) are also widely used for delivering educational content and messages (Kelly, 2010).

Most of the African countries such as South Africa, Egypt, Algeria, Libya, Morocco, Sudan, Cameroon, Ghana, Mauritius, and Botswana, have developed or are in the process of developing national ICT policies. Most of the universities lack access to infrastructure, affordable and sufficient bandwidth, and the human resource capacity to exploit the technology (Glen & Issacs, 2007). National research and education networks (NRENs) are therefore, being developed to enable connectivity among universities and, eventually all educational institutions in these countries. Universities are also developing their own internal ICT policies. The African Virtual Open Initiatives and Resources (AVOIR) project is a collaborative effort of higher education institutions from different countries for the development and use of free and open source software. One of the initiatives is the KEWL Nextgen e-learning platform. In Egypt the Egyptian Education Initiative (EEI) has been established to improve education through effective use of ICTs.

Apart from policies addressing the use of ICT in education, technology infrastructure in terms of hardware and connectivity has been established at the secondary level in most countries such as Jamaica, Anguilla, Trinidad, Tobago and Barbados. Most of the universities have built technical capacity to support the development of technology-related skills. Turkey and many other countries are focusing on the use of technology to improve teaching and learning across the curriculum (Edmond, 2008).

National Level Policy Initiatives for use of ICT in Education in India

In India, the policy framework has laid immense stress on the overall importance of using ICT for improving education. The education system in India is administered by the Ministry of Human Resource Development (MHRD) at the center and the different Departments of Education at the state level. The policy framework, financial support and guidelines to ensure a national standard of education are provided by the Government of India through the MHRD. The Department of Information Technology (DIT) in the Ministry of Communications and Information Technology (MCIT) is responsible for formulation, implementation and review of national policies pertaining to information technology. Core infrastructure policies provide for electrification and physical facilities. India has a certain amount of basic infrastructure in place by way of access to hardware and connectivity. The IT and telecom sector in India have also made significant progress. Clear guidelines and policy framework are extremely crucial for encouraging the use of ICTs in education at all levels. These policies are then translated into initiatives and schemes through different mechanisms. Their success is dependent on integration of policy objectives in the ICT and Education policies, and administrative capacity of Education departments.

The focus of Indian policy on developing ICTs as a vehicle for promoting education is visible since the use of satellite in early 1970s. The long road traversed till now has led to launching of dedicated satellite for education (EDUSAT) (Snehi, 2009). In early 1990s a number of online educational enterprises were started. The National Policy on Education, in 1992, emphasized the use of educational technology to improve the quality of education. In 1998 with development of Information Technology as one of its top priority Indian National Task Force on Information Technology and Software Development was constituted by the Government. The Task Force came out with an IT Action Plan (GOI, 1999). Major emphasis of the Plan was on expansion of IT education at school and university level including all national level institutions. Consequently, a number of programmes were developed and initiated for example, Virtual Campus Initiative of IGNOU and NIIT Net-varsity (Snehi, 2009).

The Tenth Plan provided further impetus to use of ICTs in education in the 21st century. The plan outlined goals for strengthening of the education system, as well as expansion and diversification of the Open Learning System. It emphasized knowledge and use of new information and communication technology for ensuring quality in teaching and research. During the Tenth Plan, the UGC embarked upon the promotion of information and communication technology (ICT) in a modest way by providing UGC INFONET, e-Journal Consortia, and e-Content Development (UGC, 2011).

The Eleventh Five-Year Plan also stresses on the importance of ICT in the education scenario of India. To harness the capacity of ICT in delivering educational services, the National Knowledge Network (NKN), a national ICT initiative, was launched based on the recommendations of the National Knowledge Commission (NKC). It was a collaborative effort of the Ministry of Human Resource Development (MHRD), Department of IT and Department of Telecom, to provide a unified high speed network backbone for knowledge-related institutions. The main focus is to facilitate collaborative research and

knowledge sharing. During the Eleventh Plan, significant progress was also made in the areas of expansion, inclusion, quality improvement and increased private participation.

Further, the National Mission on Education through ICTs (NMEICT) was launched by the MHRD to leverage ICTs to provide quality, personalized, interactive knowledge modules over the Internet/intranet to all learners in higher education institutions, any time anywhere (Kelly, 2010). It aimed to provide enhanced connectivity, content and access devices to educational institutes. Under this initiative, 392 universities and 18,374 colleges were provided with broadband connectivity. The development of virtual reality labs and initiatives for the creation of e-content were also taken up. In addition, a low cost computing cum access device, *Akash*, was also developed.

ICT Interventions and Initiatives in India

In India a large number of meaningful initiatives have utilised ICT to augment the quality of education (Harishankar, Balaji & Ganapuram, 2013). These initiatives are aimed at promoting the use of ICT at all levels of education. Some of these are at a pilot stage while others are fully operational. Efforts are being made to adequately leverage the opportunities made available through technology. The success of open education system has convinced the policy makers that use of ICT in education has great potential to supplement the formal education system and to provide quality education to large segments of population through cost-effective, open, and flexible manner (Kelly, 2010). The government has taken up various steps to ensure the availability of basic infrastructure but the development of relevant content and applications and their use for enhancing learning is also essential. The success of these initiatives depends on a coherent and robust policy level framework for the use of ICTs in education. The ICT initiatives need to be further strengthened with quality content and the ability of the teachers and students to integrate technology in their teaching learning practices.

In India, individual states have significant ICT-related interventions in their education systems. However, some of the major initiatives operating at a national level in educational institutions in India are as follows:

- The Consortium for Educational Communication (CEC) is one of the inter-university centres set up by the University Grants Commission (UGC). The main objective of the centre was to address the needs of Higher Education through the use of powerful medium of television along with the appropriate Information Communication Technology (ICT). Realizing the potential of television as an effective medium of dissemination of educational knowledge, UGC started the Countrywide Classroom Programmes in the year 1984. For production of educational programmes, initially Media Centres were set up at 6 Universities. Subsequently CEC was setup in 1993 as a nodal agency to coordinate, guide and facilitate the production of such educational programme through its Media Centres. Around, 22 Media Centres, known as Educational Multimedia Research Centres (EMRCs), are working towards achieving this goal. With the help of these educational multimedia research centres, the CEC produces TV programmes on syllabus-based topics. These are archived in a learning object repository.
- The National Council of Educational Research and Training (NCERT), makes its textbooks available online through its website to ensure easy and free access by teachers and learners. Similarly, NSDL, an initiative of the Council for Scientific and Industrial Research (CSIR), provides free access to supplementary curriculum based content.

- Project Ekalavya is an open source educational initiative by the Indian Institute of Technology, Bombay, for content development in Indian languages. It is an endeavour to provide an interactive platform for the creation, absorption, dissemination and usage of knowledge. The project attempts to bridge the gap between the seekers and givers of knowledge by creating innovative channels of communication.
- National Programme on Technology Enhanced Learning (NPTEL), a joint effort of the Indian Institutes of Technology (IITs) and the Indian Institute of Science (IISc), has created lectures aimed at students and faculty in private engineering colleges. Originally intended as recorded or web-based lectures, they are now popular as YouTube lectures. This is an instance of the open access concept being used in the face-to-face and formal mode of education.
- VASAT, a wing of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), has created open access learning materials on agricultural practices, aimed to promote natural resource literacy. Under a Creative Commons licence enabling reuse, these materials are presented as PowerPoint slides, Flash videos and HTML files. VASAT materials reveal a simple and effective sharing of resources in the non-formal education sector.
- Media Lab Asia (MLAsia), set up by the Department of Information Technology, Government of India, is a not-for-profit Research and Development organization. MLAsia works with academic and R&D institutions, industries, NGOs, and the Government to develop relevant technology and culturally appropriate solutions in the areas of ICT for healthcare, education, empowerment of the disabled and rural connectivity. Some of the education-related projects undertaken are Gyanpedia and Virtual Laboratories for Life Science Experiments. Gyanpedia is an interactive portal for collating, organizing, and circulating contents generated in schools in India through a single open web platform. MLAsia in collaboration with Centre for Development of Advanced Computing (C-DAC) has developed 40 Virtual Life Sciences Experiments, which use multimedia technology to simulate a virtual classroom environment. These virtual classrooms are available on CDs and multimedia cards for mobiles. Many other small-scale initiatives are being piloted in collaboration with Indian Institute of Technology and other research organizations in different states of the country.
- Towering over these initiatives is the NME-ICT, launched in 2009, and its Web portal — Sakshat — that provides one-stop access to e-content, e-journals and e-books. In addition, the National Educational Foundation, under the aegis of the National Knowledge Commission, seeks to develop web-based open resources. The Mission has two major components - (a) content generation and (b) connectivity along with provision for access devices for institutions and learners. It plans to focus on appropriate pedagogy for e-learning, providing facility of performing experiments through virtual laboratories, on-line testing and certification, on-line availability of teachers to guide and mentor learners, utilization of available Education Satellite (EduSAT) and Direct to Home (DTH) platform, training and empowerment of teachers to effectively use the new method of teaching learning etc. The Mission shall work in close cooperation and collaboration with other Missions/Schemes such as the National Translation Mission, Vocational Education Mission, and National Knowledge Network, Scheme of ICT @ Schools etc., to avoid any duplication and attain synergy.

(<http://www.nme.bsnl.co.in/>)

- The ICT @ Schools scheme was launched in 2004 with a view to provide opportunities to students to develop their ICT skills as well as use ICTs to aid the teaching learning process. Under this scheme, support is provided for procurement of computers, peripherals, software, connectivity, and so on. The scheme is currently being implemented in all states and union territories of India in government and government-aided secondary and higher secondary schools.

Almost all the states in the country are implementing central schemes such as ICT @ Schools, SSA Mission on Education through ICT and have significant number of students enrolled in open learning systems at the school and college levels (Kelly, 2010). These initiatives span different levels of education (primary, secondary, and tertiary) and different types of providers (government, public, private). However, they converge in their attempts to provide access to quality teaching and learning resources (Harishankar, Balaji & Ganapuram, 2013).

To address the challenges in the higher education sector, several government initiatives have been proposed in the Twelfth Five Year Plan. These include extensive use of ICT, shift from input-centric to learner-centric, promotion of innovation and research by creating synergy between teaching and research, development of virtual labs and open access content repositories, and capacity-building measures to adopt technology-mediated pedagogy in classrooms. There is a strong need for proper coordination of these initiatives using ICT for education with the help of a clear framework and guidelines to enable seamless integration of ICTs in education.

Developments in the Use of Educational Media in IGNOU

The term, ICT though commonly associated with computers, covers a broad range of technologies such as television, radio, handheld devices, and various communications technologies, such as telephones and networks. According to Gardiner (2002) the use of media has expanded from memory and speech to reading, writing to telephone, and radio to internet, multimedia and now is expanding again to a possible benign or troubling future. He has organized history of media around four generations:

- i) First generation—memory and speech;
- ii) Second generation—print and film;
- iii) Third generation—telephone and television; and
- iv) Fourth generation—multimedia and internet.

Gardiner argues that the hypermedia setting is educationally superior to these because it simulates the real life situation of the student and just as in the real life situation student deals with information from many sources. All these media are being used in ODL mode, but there is a lack of proper integration. The use of ICT aims at enhancing the effectiveness of the entire teaching-learning process and to achieve this end there is a strong need to integrate different media into the curriculum properly.

IGNOU has adopted a multimedia approach for reaching out to its learners. Different communication technologies have a pivotal role in IGNOU's instructional system though rapid technological developments have led to considerable changes in the use of different media. The multimedia packages arranged for learners include a wide spectrum of technologies from print to audio-video programmes, broadcasting, interactive radio counselling, teleconferencing, CD-ROMs, and web-based content delivery. The preparation of audio and video programmes is undertaken at the Electronic Media Production

Centre of the university. The different media and their use in the educational programmes of IGNOU is explained below.

Audio and Video

Since 1987, audio and video cassette-based programmes have been produced at IGNOU as a supplement to the self-learning printed materials. As a rule, an 8-credit course (1 credit = 30 student study hours) may contain at least 4 video and 6 audio programmes. The audio and video programmes could be used in group learning situations with replay facilities available at study centres. In addition to the audio cassettes in non-broadcast mode IGNOU has also been using radio broadcast.

Radio

Radio has been perceived to be a cost effective tool for greater learning at all levels. From the very beginning, AIR started broadcasting school programmes from metropolitan cities. In 1956 it attempted to broadcast programmes for rural adults, and in 1965, programmes on agriculture and allied subjects. The use of radio in open and distance learning system started in 1965 catering to the needs of distance learners at the tertiary level. Both general and curriculum based programmes were produced and broadcast by AIR. IGNOU started broadcasting its radio programmes through AIR stations at Mumbai, Hyderabad and Shillong. The programmes were aimed at learners of both the conventional and open universities. Launched in 2001, Gyan Vani is a network of FM radio stations operating from various places in the country. It operates as a media cooperative with programmes being contributed by educational institutions, NGOs, government and semi-government organizations, and UN agencies. Gyan Vani was also intended to cater to the entertainment, information and educational needs of local audiences, starting from primary school to tertiary level education.

Television

In India, television was first used for education as a pilot project in 1959, in some selected secondary schools of Delhi. With the availability of the American satellite, ATS-6, Satellite Instructional Television Experiment (SITE) was conducted in 1975–76 as an attempt to use TV on a mass scale for improving the quality of primary education in rural areas. Indian National Satellite System became operational in 1983 and national school television was introduced. The IGNOU-Doordarshan telecast started in May 1991 through the national network of Doordarshan, for provide tele-counselling to students of open universities in remote areas. In January 2000, Gyan Darshan, the exclusive Educational TV Channel of India was launched jointly by the MHRD, Prasar Bharti (Broadcasting Corporation of India) and IGNOU for the benefit of Indian learners. Gyan Darshan now has capacity for three channels to deliver educational programmes and has become a nationwide platform beaming educational programmes round the clock for all categories of learners.

Teleconferencing

Teleconferencing was introduced in India by the UGC in 1991 and subsequently by IGNOU as an additional element of interactivity to supplement satellite-based television broadcast. The first 10-day experiment on teleconferencing for distance Education, conducted in October 1993, highlighted the issue of interactivity. It further led to its regular use, by IGNOU and other organizations, for education, training and business meetings. IGNOU now uses this facility to motivate learners through induction programmes, to train counsellors and to conduct extended contact programmes as well as contact with the Regional Centres for various administrative facilitations. Gyan Darshan is being used for extensive coverage.

EduSat

Satellite services have been used in India for about three decades now. The Satellite Instructional Television Experiment, the world's largest techno-social experiment, was carried out in India during 1975–1976 with the help of ATS 6 Satellite of the USA. Since then, satellite has become an integral part of Indian broadcasting and telecommunication services. The Indian National Satellite (INSAT) system provides telecommunication and broadcasting services, as do several foreign satellites. A revolutionary change and progress in the satellite-based educational communication in the country occurred in September 2004 when a satellite fully dedicated to education and training was deployed. The channel provides facilities such as digital resource repository, virtual classrooms, data transmission, and video-on-demand.

Interactive Radio Counseling

IGNOU-All India Radio (AIR) broadcasts were started in 1992 for students of distance education. In 1998, Interactive Radio Counselling (IRC) was started as an experimental programme, for one year at the Bhopal AIR, to provide on-the-spot advice to the learners. In March 1999, IRC was extended to 8 other AIRs. With the support of AIR and its own Gyan Vani Network (IGNOU) has been using interactive radio too cater to the needs of the distance learners all over the country. This particular facility is being shared with state open universities also.

Educational Broadcast

Educational broadcasting in India is more than 40 years old. UNESCO played an important role in promoting use of electronic media for education. In 1961, the Delhi School Television Project was initiated in about 150 higher secondary schools of Delhi. (Agrawal, 2005) Since then, both radio and television have been used for educational broadcasting. The National Policy on Education (1986) gave due emphasis to educational broadcasting. Now the recent developments in information technology have added a new dimension to learning.

Electronic Media Production Centre at IGNOU

The Electronic Media Production Centre (EMPC) of Indira Gandhi National Open University (IGNOU) has emerged as a major hub for the use of electronic and broadcast media in distance education. It is aimed at reaching the learners using a variety of communication technologies. The major activities undertaken by the Centre are the production and dissemination of educational audio-video programmes. It produces curriculum-based audio and video programmes to supplement the SLMs (Self Learning Materials) of various academic programmes and courses of IGNOU.

Table 6.1: Programmes Produced by EMPC

S. No.	Programmes Produced by EMPC	In the year 2011-12	Cumulative Total
1.	Video Programmes	274	3940
2.	Audio Programmes	222	1777

(Source: Indira Gandhi National Open University, 2012)

Over a period of time it has diversified its activities manifold, from production of audio and video programmes to interactive transmissions through radio and television and Edusat based teleconferencing. EMPC serves as a nodal centre for managing Gyan Darshan channels and Gyan Vani Stations. The facilities are being shared with various educational and training institutions, State Open Universities, Central and State Govt Ministries/Departments, NGOs, corporate bodies and other sectors. EMPC also provides technical, professional and

academic expertise for various training and capacity building programmes of IGNOU and other institutions. EMPC coordinates the following:

- Gyan Darshan: A fully digital 24 hour exclusive Educational TV channel.
- Gyan Vani: Stations which relay programmes contributed by the government, NGOs, state open universities, governmental institutions et cetera.
- Teleconferencing: One-way video and two-way audio teleconferencing facility.
- Interactive Radio Counselling: A live phone-in counselling program.
- Education Research and Training (ERT): ERT unit of EMPC is engaged in developing academic programs, conducting research and training related to media and communication.

Gyan Darshan

Gyan Darshan is a major milestone in the field of Educational Television in India. It is a joint venture of Ministry of Human Resources Development (MHRD), Ministry of Information and Broadcasting (I&B Ministry), IGNOU and Prasar Bharati. IGNOU is the nodal agency for coordinating and up-linking the bouquet of four educational TV channels under the banner of Gyan Darshan (GD). It has four round-the-clock channels offering interesting and informative programs for school-going children, college students, and youth seeking career opportunities.

- *GD-1* is a 24-hour exclusive educational channel which telecasts educational programmes for target audience of different age groups. Programmes of NCERT/CIET, IGNOU, NIOS, DST and others as well as programmes acquired from independent producers and foreign broadcasters are telecast through this channel.
- *GD-2* Channel is an interactive channel used by the university for tele-counselling, tele-training and tele-convocation. Important nationwide programmes for IGNOU learners, lectures by eminent experts/dignitaries, discussions with Regional Centre (RC) staff, tele-counselling sessions for various programmes are being conducted through this channel.
- *GD-3*, known as Eklavya Channel, is exclusively devoted to technology education for the benefit of students of IITs and other engineering colleges in India.
- *GD-4* called Vyas Channel, telecasts higher education programmes produced by EMMRCs under UGC's 'Country-wide classroom'. *GD-4* is co-ordinated by Consortium for Educational Communication (CEC), University Grants Commission (UGC).

Gyan Vani

Gyan Vani, is an educational FM Radio Channel operating through several FM stations from various cities in the country. At present, around 37 FM stations are operational. Gyan Vani aims to enhance and supplement the teaching learning process by reaching the learners through a low cost popular mass medium using interactive formats. Gyan Vani Stations operate as media cooperatives with the day-to-day programmes contributed by various educational institutions such as NCERT, NIOS, IGNOU and State Open Universities, NGOs, Ministries, government organisations and foreign broadcasters. Each Gyan Vani Station has a range of about 60 kms and covers an entire city/ town including the adjoining rural areas. Gyan Vani serves as an ideal medium for niche audience addressing the local educational, developmental and socio-cultural requirements. The flavour of the channel is by and large local and the medium is English, Hindi or language of the region. Live phone-in programmes are popular components of the network.

Virtual Classroom Network

Edusat is a collaborative project of ISRO, MHRD, IGNOU and State Departments of Education. This satellite provides interactive distance education system through audio-video streaming and data exchange facilitated through a computer network. IGNOU has already established 182 SITs (Satellite Interactive Terminals) across the country to facilitate regular two-way video conferences. The teaching end is co-located with the Hub (earth station) at EMPC, IGNOU. The Hub serves the IGNOU network as well as seven other networks of other institutions.

Interactive Radio Counseling (IRC)

Interactive Radio Counseling (RC) facility is being provided by GV Stations to enable students to interact with the faculty, academic counsellors and student support staff. The IRC sessions are conducted by Regional Centres through respective Gyan Vani Stations. A toll-free telephone facility is available to enable learners to interact with experts.

Media ICT Initiatives & Practices in IGNOU

The Indira Gandhi National Open University (IGNOU) has emerged as a national resource centre for open and distance learning (ODL), with international recognition and presence. The university uses a variety of media and latest technology for providing continual professional development and training to all aspirants for further empowerment through education. At IGNOU emphasis is laid on developing interactive multimedia and online learning, and adding value to the traditional distance education delivery mode with modern technology enabled education within the framework of blended learning. To reach out to the unreached IGNOU has taken certain major initiatives towards the development of interactive multimedia content and learner support through web-based platforms for the distance learners. Some of the initiatives taken up at IGNOU are eGyanKosh, FlexiLearn, Education Broadcast. These are mentioned below.

IGNOU's eGyanKosh

IGNOU initiated the development of a knowledge repository in October 2005 to store, index, preserve, distribute and share the digital learning resources developed by the ODL institutions in the country. This repository, named eGyanKosh (www.egyankosh.ac.in), has emerged as one of the world's largest educational resource repositories. It offers free, open access and is available to the world to facilitate self-learners and empower educators (Fig. 6.1).

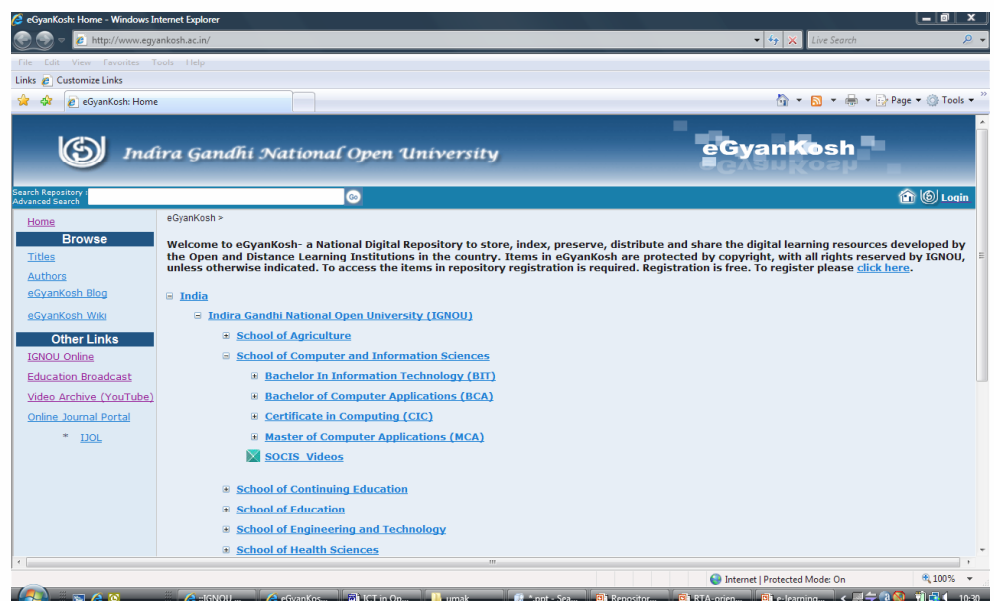


Fig. 6.1: eGyanKosh Main Page
(Source: <http://www.egyankosh.ac.in>)

Around 95 percent of the self-instructional print material (around 2481 courses) of IGNOU and more than 2,200 courses and 2,000 video lectures are available online through the repository. The print-based contents are available as PDF files and the video programmes are provided through a YouTube channel (Fig. 6.2). established for eGyanKosh, with the metadata link in the repository. The repository also has a wiki for collaborative content generation.

FlexiLearn

The facilities of eGyanKosh have been further extended with a FlexiLearn platform. The FlexiLearn website (www.ignouflexilearn.ac.in) is a personal learning space where free learning resources are integrated with a learning management system for anyone who wants to learn, whatever their educational needs and experience. Any one can register and explore courses for free (Figure 6.3). More than 936 open courses are available on FlexiLearn for self guided and self-paced learning.



Fig. 6.2: IGNOU-YouTube Collaboration
(Source: [http:// www.youtube.com/user/egyankoshIGNOU](http://www.youtube.com/user/egyankoshIGNOU))

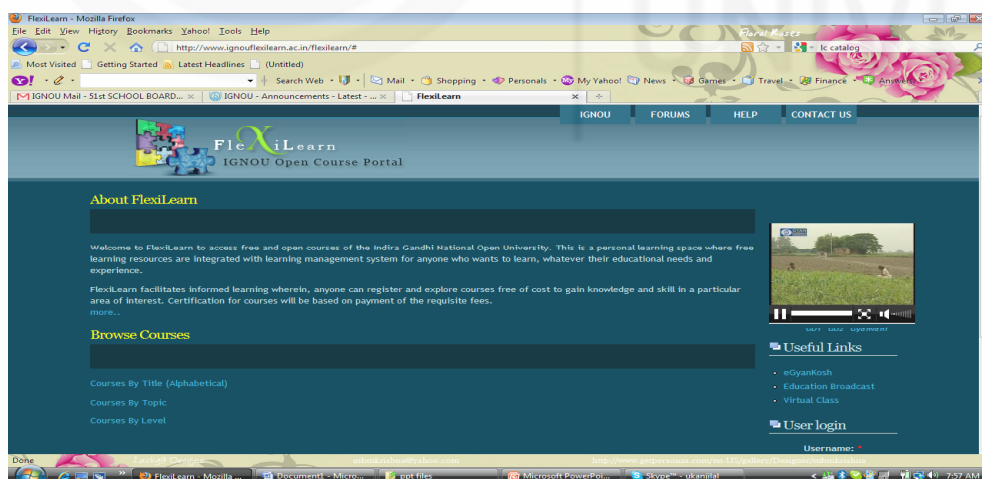


Fig. 6.3: FlexiLearn Main page
(Source: [http:// www.ignouflexilearn.ac.in](http://www.ignouflexilearn.ac.in))

The idea is to promote self-learning through community-based interactions with built-in Web 2.0 tools. (Kanjilal, 2013). Whilst anyone can register for free to access the online courses, for certification requisite fees have to be paid through an online payment gateway. To earn a degree or diploma, the learner will have to fulfill necessary qualifications and complete the programme as per the university's established standards.

Education Broadcast

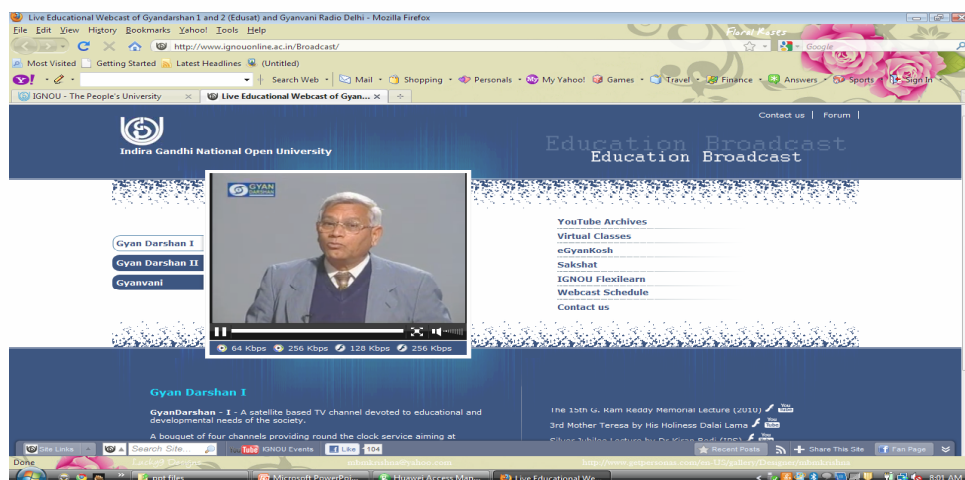


Fig. 6.4: Education Broadcast

(Source: [http:// www.ignouonline.ac.in/Broadcast](http://www.ignouonline.ac.in/Broadcast))

Live educational programmes are available through the webcasting facility at Education Broadcast (Fig. 6.4) (www.ignouonline.ac.in/Broadcast). This webcasting platform provides access to broadcast channels such as Gyan Darshan-1, Gyan Darshan-2 and Gyan Vani (Delhi), with many more channels planned for addition. The platform supports multiple operating systems, processors and devices.

Online programmes



Fig. 6.5: IGNOU Online

(Source: [http:// www.ignouonline.ac.in](http://www.ignouonline.ac.in))

The university at present is offering 27 major online programmes (Fig. 6.5) using an eLearning platform developed in house, and more than 5,000 students are registered for these programmes. The platform provides a complete virtual learning environment covering all the activities, from registration to certification. The platform has integrated tools for question bank generation, course management, assignment management, online examination etc. The eLearning platform is mainly used to provide interactive services to learners both in real time and asynchronously (Kanjilal, 2013).

Pan-African e-Network Project

Pan-African e-Network Project is another major initiative on the online education front where IGNOU is participating. This is a collaborative project of the Ministry of External Affairs, Telecommunications Consultants India Limited and IGNOU, under which IGNOU is to provide tele-education to 53

countries of Africa. This ICT project between India and the African Union seeks to enable sharing of expertise in the areas of tele-education, telemedicine, resource mapping, e-governance and e-commerce. The project links 7 Indian and 5 African universities, 12 Indian and 5 African super-specialty hospitals and 53 telemedicine and tele-education centres in Africa. Regular Tele-Education live sessions are being conducted from India. The project is now proposed to be expanded to establish the Indian Africa Virtual University. As part of its objectives, the virtual university will formulate academic programmes, promote collaborations for distance education, coordinate special action plans and strengthen the consultation mechanisms on education between India and African nations.

National Knowledge Network

The National Mission on Education through ICT, launched in 2009, aims to leverage ICTs for enhancing the teaching learning experience of learners. A high-speed digital broadband network, the National Knowledge Network, is envisaged for interconnecting the country's major research and educational institutions, colleges, and universities. A structured empowered committee will be in charge of coordinating the activities of creation and implementation of the content, application, and establishment of the network. The Mission has two major components: content generation and providing connectivity, including last mile connectivity for students and institutions. On the content generation front, a wiki style collaborative platform under the supervision of content advisory committees is envisaged. Renowned institutions and educators will be part of the content generation effort and different activities in respective areas of excellence may be coordinated by them.

Sakshat Portal

The Sakshat Portal (www.sakshat.ac.in) launched by the MHRD in 2006 is a single window portal for all education-related needs of students, teachers, and lifelong learners. It provides a range of services from informational services like details of scholarships, tests, educational resources, as well as interactive services like a discussion forum, one-on-one sessions with teachers, career counselling, and video conferencing facility. Sakshat has been designed and developed with the help, cooperation and participation of the Indira Gandhi National Open University (IGNOU), Delhi University, Indian Institute of Science, Indian Institutes of Technology and other educational institutions. The portal addresses the educational requirements of learners from Kindergarten to PhD. All the e-learning content is disseminated through Sakshat portal free of cost. The portal offers various online courses under Spoken tutorials and NPTEL programs.

Distance Education Program (DEP-SSA)

The Distance Education Programme (DEP) is a major intervention under the Sarva Shiksha Abhiyan, created by the MHRD, Government of India to implement the distance education activities under SSA in the country. This national level project aims to provide need-based and local specific training to teachers and other elementary education functionaries associated with SSA by employing the open distance learning mode. Through the DEP-SSA, teacher training is imparted without dislocating the functionaries from their place of work and is paced as per their convenience. The DEP-SSA strengthens the on-going efforts of capacity building at elementary education level, through multimedia inputs which include print, audio, video, multimedia and teleconferencing, thereby facilitating work place and multimedia based training and content generation. Indira Gandhi National Open University is the nodal agency responsible for implementing the distance education component throughout the 28 states and 7 Union Territories of the country. The DEP-SSA strengthens the ongoing efforts of capacity

building at elementary education level through distance learning inputs such as development of Self Learning Material (SLM), Audio/Radio/Video scripts, Multi-Media Package (MMP), Users Manual for Distance Learning (DL) Materials and training through teleconferencing

Rajiv Gandhi Project

The Rajiv Gandhi Project for EDUSAT (Education Satellite) Supported Elementary Education (RGPEEE) is another initiative aimed at harnessing the benefits of EDUSAT. It is a collaborative project of MHRD, IGNOU and ISRO. It is operational in Madhya Pradesh, Bihar, Chhattisgarh, and, Uttar Pradesh. The project promotes the use of EDUSAT in enabling teachers to incorporate ICT in elementary education. It aims to provide education through massive satellite connectivity up to grass-root level. The focus of the project is on development of district level networks for interactive online modes of communication to meet the education and training requirements. The district networks connecting more than 862 Schools, District Institute of Education and Training (DIET) and Block Resource Centres (BRCs) in the districts have been set up. Apart from providing training to the school teachers, the facility of tele-medicine is also provided by connecting selected District Hospitals.

SMS Alert Service

SMS Alerts Services were first launched by IGNOU on November 2008 at its headquarters in New Delhi and a select number of regional centres across the country. At present SMS Alerts Services enables all its 48 regional centres, 21 schools, 15 centres and 12 divisions to send SMS to their respective students in their jurisdiction. This enables each and every constituent department of IGNOU to send communications by SMS to the learners and other stake holders attached to them. The SMS service aims to reduce the communication gap between IGNOU and its learners.

IGNOU: Policies and Perspectives

The adoption of ICT in education system requires proper planning, basic policies related to infrastructure, connectivity and communication. The use of ICTs in education has influenced the delivery mechanism and the content of education. These developments also necessitate proper implementation strategies at the institutional level to ensure proper use of ICTs for improving the quality and efficiency of education. Policies, standards and guidelines related to the development of quality content help to ensure quality in the digital content being produced. IGNOU has been a pioneer in the use of media ICTs in distance education.

IGNOU's OER Policy

The National Knowledge Commission (NKC) set up by the Government of India recommended the use of globally available OER and open access (OA) materials for achieving the widespread availability of high-quality educational resources. In India an increasing number of OA electronic journals, OA repositories and open source software based repositories have come up.

IGNOU's eGyanKosh is a significant effort towards use of OER in higher education. The courses available on eGyanKosh and FlexiLearn so far are licensed materials and the available content is non-derivative, non-reusable and governed by copyright rules (Kanjilal, 2013). IGNOU aims to promote the use of its own as well as other OER in the teaching learning process at all levels within the university system. Towards this end, the university's Board of Management decided that all the learning resources of eGyanKosh and FlexiLearn should be offered as OER with an open license policy. The university plans to adopt an

OER policy to guide the promotion, development and use of OER and further ensure that the highest standards of education are achieved (Kanjilal, 2013). IGNOU's OER policy aims to:

- Make materials available under Creative Commons (CC) licenses.
- Support voluntary participation of faculty and others in developing OER content.
- Advise faculty and other participants on publication rights and licensing issues.
- Provide guidance in development and review of OER materials prior to sharing them on a worldwide scale.
- Define collaborations within and outside the university, with the intent to allow access to open content.

The proposed OER repository will be a platform for educators to share educational resources with others worldwide (Kanjilal, 2013). The repository will include content available as an entire course, a complete book or a more granular piece, such as a single learning object, based on the following criteria:

- The content will be made publicly available.
- The content will be made available in digital or electronic format.
- The content will be made available free, at least for educational purposes.
- The content will be governed by Creative Commons licenses, making it reusable, distributable and adaptable for other audiences and technology platforms.

All materials released on the IGNOU OER repository site will be covered under the Creative Commons Attribution-NonCommercial-ShareAlike 2.5 India license (CC BY-NC-SA), which will allow anyone to freely modify, rework and extend any of the material, and later distribute it, under the following conditions (Kanjilal, 2013):

- The user provides attribution to the creator of the material (i.e., IGNOU in the case of IGNOU's learning materials).
- Material may be reused and redistributed for non-commercial purposes.
- The derivative version must be licensed under the same licence (CC BY-NC-SA).

This will enable adaptation of IGNOU materials by other institutions for noncommercial use and foster creation of derivative works by other individuals and institutions, to be released under the ShareAlike (SA) licence.

The university plans to provide resources of the highest quality through its OER repository. The reviewing process will be carried out at different levels. In addition to the review processes, users will be able to leave comments and grade content. At the university level, an OER Board is proposed to review policy, as well as the production, delivery and access processes for OER. With the adoption of its OER policy, IGNOU will be the first university in the country to offer all its educational resources under Creative Commons open licenses. The university is now in the process of implementing the policy and setting up the OER platform for content development and sharing.

Conclusion

Educational multimedia systems have come to play a pivotal role in the teaching learning process of today promising to make learning easier, more convenient, and thus more effective. In this unit we discussed about the use of Media ICTs in education systems especially the ODL systems of today. A policy framework enables in proper development use of ICT in education at all levels. We discussed the ICT policies related to the use of ICT in education taken up by various developing countries such as India, Pakistan, Maldives, Bhutan, Sri Lanka, and so on. Most of the countries in Africa have also developed or are in the process of developing national ICT policies. We examined the policy framework in India which has laid immense stress on the overall importance of using ICT for improving education. We also discussed a large number of meaningful initiatives taken up in India for utilizing ICT to augment the overall quality of education. These initiatives span different levels of education (primary, secondary, and tertiary) and different types of providers (government, public, private). We also discussed the multimedia approach adopted by IGNOU for reaching out to its learners. The instructional material is provided through wide spectrum of technologies from print to audio-video programmes, broadcasting, interactive radio counselling, teleconferencing, CD-ROMs, and Web-based content delivery. The preparation of audio and video programmes is undertaken at the Electronic Media Production Centre of the university. Towards the end of the unit, we discussed certain major initiatives taken up at IGNOU towards the development of interactive multimedia content and learner support through web-based platforms for the distance learners. Policies, standards and guidelines related to the development of quality content help to ensure quality in the digital content being produced. Towards this end IGNOU has adopt an OER policy to guide the promotion, development and use of OER

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Dear Student,

While studying the units of this block, you may have found certain portions of the text difficult to comprehend. We wish to know your difficulties and suggestions, in order to improve the course. Therefore, we request you to fill out and send us the following questionnaire, which pertains to this block. If you find the space provided is insufficient, kindly use a separate sheet.

Questionnaire

Enrolment No.

1) How many hours did you need for studying the units?

Unit no.	1	2	3	4	5	6	7	8	9	10
No. of hours										

2) Please give your reactions to the following items based on your reading of the book:

Items examples , if	Excellent	Very Good	Good	Poor	Give specific	poor
Presentation Quality						
Language and Style						
Illustrations Used (diagrams, tables, etc.)						
Conceptual Clarity						
Check Your Progress Questions						
Feedback to CYP Questions						

3) Any other comments:

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