Distance Education Through Multi-media

Wichit Srisa-an

Introduction

A common educational problem of developing countries is the inequality of educational opportunity This means that only a minority have the chance to study above the legally-required minimum level The higher up the educational ladder one goes, the fewer the opportunities for further study. While the educational needs of the people grow increasingly greater, the capability of developing countries to meet these needs for higher education remains limited. This is because resources are limited, and these limited resources must be poured into other areas of the country's development This causes the quantitative and qualitative development of the people in general to be out of harmony with the country's overall development even though, in fact, the quality of human resources is the most important factor in a country's development.

In developing countries, human resource development is of crucial importance Such development not only increases the quantity of trained manpower in response to national needs, but it also improves the quality of life and work for people generally. As human resources are developed, rising expectations are engendered in the people for further education But opportunities for education at the highest level are limited because resources are limited Under these conditions of scarcity, inequality of educational opportunities naturally arises Such inequality can be erased only by efforts to democratize education. Thus various models and methods must be explored to make higher education truly education for the masses But it is essential that these approaches be economical and efficient so as not to exceed limited resources

In the past decade many countries in Asia have extended the range of educational opportunities by adopting the open education system and setting up, for this purpose, higher educational institutions of distance teaching and learning Pakistan's Allama Iqbal Open University, Sri Lanka's Open University, China's Central Broadcasting and TV University, Australia's Deakin University, Japan's University of the Air, Korea's Correspondence Univer-

Dr Wichit Srisa-an is Professor and Founding Rector of Sukhothai Thammathirat Open University in Thailand

sity, Indonesia's Terbuka Open University, India's Indira Gandhi National Open University, and Thailand's Sukhothai Thammathirat Open University — all these institutions of distance teaching, despite their individual characteristics, do indeed have one aim in common: to serve the needs of adults seeking to upgrade professional qualifications and/or to acquire a real understanding of the subjects chosen. At present, a large number of countries in the developing world, especially those in Asia, have expressed a great interest in providing higher education through distance teaching systems. It is to be expected that other distance teaching institutions will be established in many countries in the near future.

In the past, whenever there were extensive educational reforms, the causes usually cited were social changes, academic and technological advances, or even political influences. It is true that the aforementioned items might well have been the stimulus or impetus for the educational changes. However, if a more profound analysis is made, it will be found that the factor having the greatest influence on the changes and serving as an important basis for the use of new methods in the field of education has been "the conceptual factor" which administrators and educational personnel have adopted as their guiding principle.

One of the concepts which has most influenced the provision of education in the present age is the concept of *lifelong education,* and education is, of course, an important factor throughout one's life. It is a process and an activity which concerns people from birth to death. Education according to this concept must meet the needs of society and of individuals of all ages and categories. There must be models and methods of providing education which foster learning for both young people and adults — both formal and non-formal. The concept of lifelong education in the past decade has become a firm belief which has influenced education in various countries throughout the world.

If the concept of *lifelong education* is considered in its social aspect, it is generally accepted that today's society is a learning society. By this I mean that for a person to adjust successfully and contentedly to a rapidly changing society such as today's, he must ensure that his learning is constantly up-to-date. Continuous learning thus facilitates the leading of a successful life, and a member of society who wants to get ahead must make use of various types of education. Modern technology has become an important vehicle in providing lifelong educational activities. In the modern age there is thus a merging or coming together of the learning society and the technological society. Various social institutions, apart from educational institutions that impart knowledge to school-age children, have an important role to play in providing various types of education for young people and adults. The home, church, and many types of public and private agencies — including mass media institutions — have been stimulated to play an ever-increasing role in improving the quality of life of the people.

Adopting the concept of lifelong education as a principle in providing education has resulted not only in the expansion of the scope and manner of such provision, but also in the development of many new educational methods. Of particular importance has been the estab-

lishment of open education using the distance teaching and learning system, which has been expanding rapidly in various countries throughout the world.

In general, the educational systems with which we are familiar usually can be characterized as "closed education," closed in three senses, namely:

1. Limited student enrolment – that is, the number of students admitted is limited to those who can be accommodated in terms of the number of desks, teachers, buildings, and supplies. This is because the students must come to study in a specifically designated place. Since there is a need to limit the number of students, this type of educational institution ordinarily looks for a selection process which will ensure the number of quality students that it can accommodate. This in turn leads to the condition of limited opportunity, and perhaps has an effect on the equality of educational opportunities if the selection process is not correct and appropriate.

2. Structural limitations – that is, the process and structure of this type of educational system is ordinarily fixed fairly rigidly. It is difficult to provide learning activities which will satisfy individual needs and allow for individual expression, and there is very little flexibility and facility in the entire educational process.

3. Limitations concerning the learning environment – that is, teaching and learning are ordinarily limited to the classroom or lecture hall. Thus the learning environment is usually limited to the confines of the educational establishment itself, with the relationship between the teacher and students in the classroom being the most important consideration.

Open education featuring a distance teaching and learning system, on the other hand, could be considered "expanded education," in that it seeks to expand educational opportunities fairly and to the greatest extent possible. This alleviates the problem of limitations regarding the process, structure, and learning environment. Instead of using a conventional classroom with a teacher as the center of teaching and learning, open education emphasizes various types of educational media, which result from the application of advanced knowledge or technology to education. The intention is to have the students study to the fullest extent on their own without having to enter a conventional classroom. An important factor in open education at whatever level is *instructional media*, which is one component of educational technology.

In the past, there have been different experimental approaches to open education featuring various types of instructional media – both single media and mixed media. The first well-known approach was correspondence education, in which teaching materials were sent by mail directly to the student's home. It was believed that printed materials were the most efficient instructional medium. If the materials were well written and organized and appropriate techniques were employed, the student could study by himself with very little or indeed no direct assistance from the teacher. Correspondence education has thus been an important

medium for expanding educational circles, extending learning opportunities, and destroying barriers to learning, thereby making open education available to ever greater numbers of students

With the advent of radio broadcasts, another medium was applied to the field of education. Radio broadcasts were used not only to supplement conventional classroom instruction, but also as a medium in open education as well Schools or educational institutions of the air were established which broadcast radio lessons directly to the home. In some instances radio broadcasts were used in conjunction with correspondence education; in other cases the broadcasts were used as a single medium of instruction. An important development in the field of instructional media occurred when television was applied to education. Telecasts can be considered a highly effective instructional medium, for there are pictures as well as sound The subsequent introduction of color TV has further enhanced the effectiveness of this medium in many countries.

Research conducted both within and outside Thailand concerning the effectiveness of different types of media has indicated that each particular medium has its strong and weak points. The exclusive use of one medium is not likely to be completely effective. The use of the traditional classroom with regular interaction between the teacher and students is highly effective but can be used to only a limited degree, and it may not be appropriate for certain age groups Printed materials, while obviously nothing new, can still be an effective core medium for those who can read and write. Radio and television can effectively spark student interest, but the student must pay very close attention to the programs and tune in on time or the lesson will simply pass him by Of course, the programs can always be taped for subsequent review at the learning speed of the particular individual, but this can be fairly expensive Open education at present has thus turned to the use of *mixed* or *multi-media*, instead of the exclusive use of one single medium. That is, printed materials, electronic media such as cassette tapes and video-tapes, and radio and television broadcasts have been combined in a mixed media system, with one medium serving as the core medium and the other media serving as supplementary media. This is done in order to make teaching and learning more effective and interesting. Thus we might say that the use of "multi-media" has been "multi-beneficial" in terms of increasing the prospects and the effectiveness of distance education.

DISTANCE TEACHING SYSTEM

Distance teaching means quite simply that the students and teacher are at a distance from one another, with little opportunity for face-to-face contact. They are, however, able to have joint educational activities through the use of various instructional media geared to facilitate learning on the part of the students. The bulk of this learning arises from self-study, at times and places convenient to the students. Distance teaching thus involves the communication of knowledge, attitudes, and skills to learners in such ways as to enable them to acquire and extend them into the conduct of their everyday lives. Since communicating the above-mentioned items is the prime objective, this communication must be as efficient and effective as possible within the constraints of existing resources. In general, the criteria for determining the efficiency and effectiveness of distance teaching involves analyzing the extent to which learners have achieved the learning objectives set by the curriculum or by themselves. Ideally, an effective distance teaching system should ensure that the students find the learning experiences stimulating, interesting, enjoyable, and relevant to their aspirations and lifestyles. Thus the effectiveness of distance education depends to a large extent on the quality of the instructional media and delivery systems.

The selection and development of instructional media appropriate to the conditions of individual societies is thus an important problem. Factors to be considered in media selection include the following:[1]

1. Availability
It is essential that the chosen instructional media and delivery systems be technologically practicable; that is, the technology to be used in the individual societies must have been adequately developed, and there must be sufficient manpower to make continued use of the technology.

2. Accessibility
The instructional media and the delivery systems to be used must be accessible to both the distance teaching institution and the learners. For example, if television is chosen as an instructional medium, not only must there be appropriate and adequate air time; but also the students must have TV sets capable of picking up the programs.

3. Acceptability
The instructional media must be accepted both by the teachers and the students. This concerns the aptitudes and attitudes of both groups with respect to certain types of media. If the teachers or students are not skilled in the use of a particular medium, it is not likely to be very effective.

4. Validity
The instructional media must be appropriate for achieving the objectives of the

learning materials Care must be taken to choose media which are suitable for the content or subject matter one wishes to convey.

5. Economics

The instructional media must not be overly expensive. This will involve considerations of economies of scale and cost effectiveness.

Once development of distance teaching systems is undertaken in various countries based on the criteria just mentioned, there are two major approaches which can be followed, namely:

1. The Uni-Medium or Single Medium System — This is the distance teaching system which has long been used in correspondence education. Printed materials will generally be used as the core medium, but this approach can involve the exclusive use of any single medium, such as radio or television broadcasts. The extramural studies programs of various universities in Australia which use printed materials exclusively are a good example of the Single Medium System.

2. The Multi-Media or Mixed Media System — This is the distance teaching system developed later, most particularly in the period when electronic media came to be used more widely in the field of education. The multi-media system ordinarily employs one medium as the main or core medium with other media playing a supplementary role in order to bring about a more interactive format Printed materials or print media are generally used as the core medium, with electronic media such as radio, TV, audiocassettes, videotapes, etc., serving as supplementary media Most open universities employ the multi-media system and feature printed materials as the core medium. This is true of the Open University in the U K. and Sukhothai Thammathirat Open University in Thailand.

In fact, the development of instructional media for self-study in the form of mixing printed materials with other media actually occurred on a widespread scale even before the advent of the open universities. One well-known example of the mixed media approach is Linguaphone, which developed language lessons combining printed materials with records and, subsequently, tapes to teach language skills. Mixing of just these two media improved the effectiveness of language teaching and enabled students to study on their own. With advances in electronic technology, many different media could be mixed together and used in the transfer of knowledge. This led to an even more effective use of instructional media.

Regarding the media used for distance teaching and learning, a survey conducted by the International Centre for Distance Learning of the United Nations University [2] found that many institutions used several different methods — correspondence, telephone, radio, TV, audio, video, study center, and so on. As correspondence is by far the cheapest method of communicating at a distance, only 27 out of 468 programs do not use correspondence as one of the methods. Of all the distance-learning institutions, 29 percent use only correspondence, particularly in Western Europe and North America.

The results show quite remarkable differences between regions. The telephone is used as a teaching method by more than a quarter of the programs in North America, Western Europe, and Australasia, but is hardly used in Africa, Asia, or South and Central America Radio and television show a similar picture. Both are used worldwide to roughly the same extent, but whereas the use of radio greatly exceeds that of television in the developing world, television is much more popular than radio in North America. This almost certainly is due to the penetration of the media.

The cost of audio cassettes has fallen dramatically, and they now offer a real alternative to the printed word. Australasia has been quick to recognize this and to use it: no fewer than 70 percent of their programs use audio cassettes. Australasia is also leading the way in the use of video cassettes.

Another striking fact is the very low use made of any technique other than correspondence in Western Europe. This is probably because much of the distance-learning activity is done by conventional institutions which use only the cheapest methods. Thus radio and audio cassettes are the only other methods used widely

Electronic media today have an increasingly important role in distance teaching/learning systems, especially those media which permit the development of interactive potentiality and allow students convenient control over their use
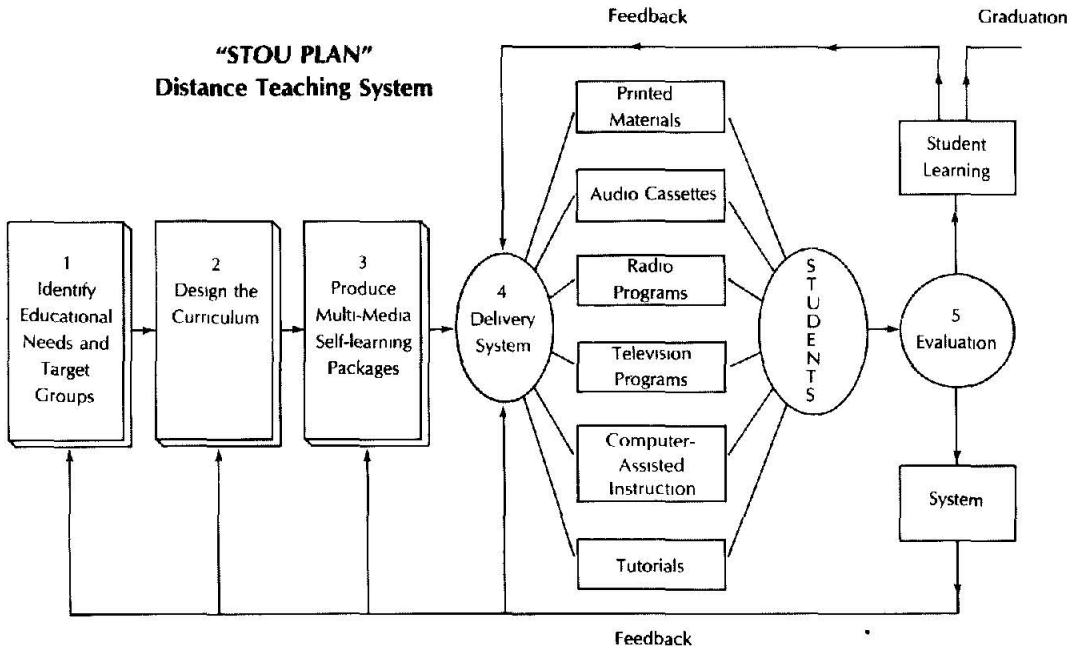
The media which have attracted special attention in this respect are computers and, in particular, their application in Computer-Assisted Instruction (CAI).

In distance teaching/learning systems employing a multi-media approach, CAI is, therefore, one important medium that can contribute significantly to enhancing the effectiveness of distance education.

Since I myself have direct experience with the development of a distance teaching system which uses the mixed media approach and features printed materials as the core medium, I will emphasize this approach in my paper. It could be viewed as one model of the use of printed materials in distance education

The distance teaching system which I will present as a case study is the system developed at Sukhothai Thammathirat Open University in Thailand. It is a case of the development of a distance teaching system employing a mixed-media approach suitable for the conditions of a developing country. The "STOU PLAN" [3] for Distance Teaching System, which is composed of 5 stages, can be concisely illustrated in the following chart.

"STOU PLAN"
Distance Teaching System

Feedback

Graduation

1 Identify Educational Needs and Target Groups	2 Design the Curriculum	3 Produce Multi-Media Self-learning Packages

4
Delivery System

Printed Materials

Audio Cassettes

Radio Programs

Television Programs

Computer-Assisted Instruction

Tutorials

STUDENTS

5
Evaluation

Student Learning

System

Feedback

The first stage in the development of the distance teaching system involves identifying the educational needs of the target groups through preliminary surveys and research This enables us to know the needs of the general public as well as various individual groups. This information can then be used as a basis for the development of the following stage.

The second stage is curriculum development, and the structure of the curriculum must be set up in such a way that it facilitates the use of distance teaching techniques The academic structure in the "STOU PLAN" is based on the principle of course integration. That is, an attempt is made to integrate different academic areas into specific groupings or categories which will facilitate the student's ability to synthesize and apply the knowledge acquired and which will be easy to study on one's own Course integration is thus primarily of an interdisciplinary nature The establishment of the different schools has been carried out along the lines of career and professional development rather than being discipline-oriented in order to conform to the principle of course integration just mentioned. The curriculum is thus divided into "course blocks," each of which carries 6 semester credits Four-year bachelor's degree programs are composed of 22-24 course blocks or 132 to 144 semester credits The reason that the "STOU PLAN" has set up the 6-credit course block exclusively rather than subdivide into smaller courses is based on two major principles, namely.

1. Academic principle — Setting up the course blocks in the manner just described facilitates course integration; that is, it makes it easier to integrate course content in an interdisciplinary fashion more completely than would be the case if smaller, less-encompassing courses were used. In terms of learning, this approach is appropriate for the distance education system since it enables the students to concentrate rather than diffuse their study efforts; for in any one semester, they will not have to study more than three blocks The use of the course blocks allows us to oversee the standards and quality of the teaching/learning process to a fairly high degree. This is because the production and development of the course blocks is done by a course-production team. Academic standards are thus the responsibility of a group of academics rather than of individual instructors. Aside from this, the use of course blocks also facilitates the establishment of such supplementary media as radio, television, and special tutorial sessions. Particulary when there is a limited amount of time, it is easier to produce interesting programs related to the course blocks than would be the case if numerous smaller courses were used. When the curriculum structure featuring this block system is considered solely from the academic viewpoint, four positive aspects can be identified, namely

(1) It facilitates academic integration;
(2) It facilitates self-study;
(3) It improves the oversight of academic quality and standards; and
(4) It facilitates the use of supplementary media in systems based primarily on printed materials.

2. Administrative principle — The use of the course-block system reduces the complexity of administration, making it more economical and efficient. Students are able

easily to control their own study load, and the system is convenient with respect to registration, testing, and teaching. Students are able to register by mail, and examinations can be given in every province in the country on a single weekend. In addition, the course-block system helps avoid "academic monopoly" in which a single instructor is the sole authority on a particular subject. This is due to the fact that the course block has far more content and activities than could be produced by a single instructor on his own with a substantial teaching load The course-block system also helps bring about an integrated approach to work, for the system demands that work be carried out as a team in the form of a course-production group. Each team has content specialists, an educational technologist, and an evaluation specialist who are jointly responsible for all phases of course production This naturally results in integrated instructional materials and ensures that the educational system will be fully open, for it provides the opportunity for numerous specialists from outside institutions to participate in the development of the materials. The excellence which exists in society is thereby utilized to the fullest extent. An additional benefit is that this working together as an academic team helps bring about a spirit of teamwork in administrative work as well, a great advantage for the overall administration of the University

The third stage involves selecting and producing the teaching media packages. The "STOU PLAN" was chosen to make use of a mixed-media approach based on the five following criteria: availability, accessibility, acceptability, validity, and economics. Printed materials are the main or core medium, and tapes, radio and television programs, and special tutorial sessions are the supplementary media. For each course block, the student is expected to spend approximately 180 hours per semester studying the printed materials. (This amounts to roughly 12 hours per week for 15 weeks). He also listens to at least one 60-minute tape (For some course blocks, such as the English courses, the student will listen to as many as 15 tapes.), listens to fifteen 20-minute radio programs, and views five 30-minute television programs. He also has the opportunity to attend 10 hours of special tutorials held in local study centers located in each province In producing teaching media packages according to the "STOU PLAN," the first step is the production of the printed texts and workbooks. Then selected portions of the text are used as the basis for tapes, radio and TV shows, and tutorial-session workbooks. These latter media are considered as supplements to the printed materials — the core medium. The completed teaching package is thus in the form of a multi-media self-learning package

The fourth stage involves establishing delivery systems in order to communicate knowledge to the students. The printed materials and accompanying tapes are sent by mail to the student's home, and radio and TV shows are aired at the same time throughout the country. The tutorial sessions are held on weekends in local study centers located in each province. CAI programs are provided at selected study centers and function as "electronic tutors" for such courses as science, mathematics, and statistics. The distance education system established according to the "STOU PLAN" is thus in the nature of home-based education.

The fifth stage is composed of evaluation and follow-up, which is of two types. The first is evaluation of student learning by final examinations held each semester in the local study centers. A student must sit for the exam in the study center to which he has been assigned, and the exams are held at the same time throughout the country, ordinarily on weekends. The second type of evaluation is system evaluation, which is conducted in order to obtain feedback that can be used to improve the effectiveness of the curriculum and the teaching/learning process.
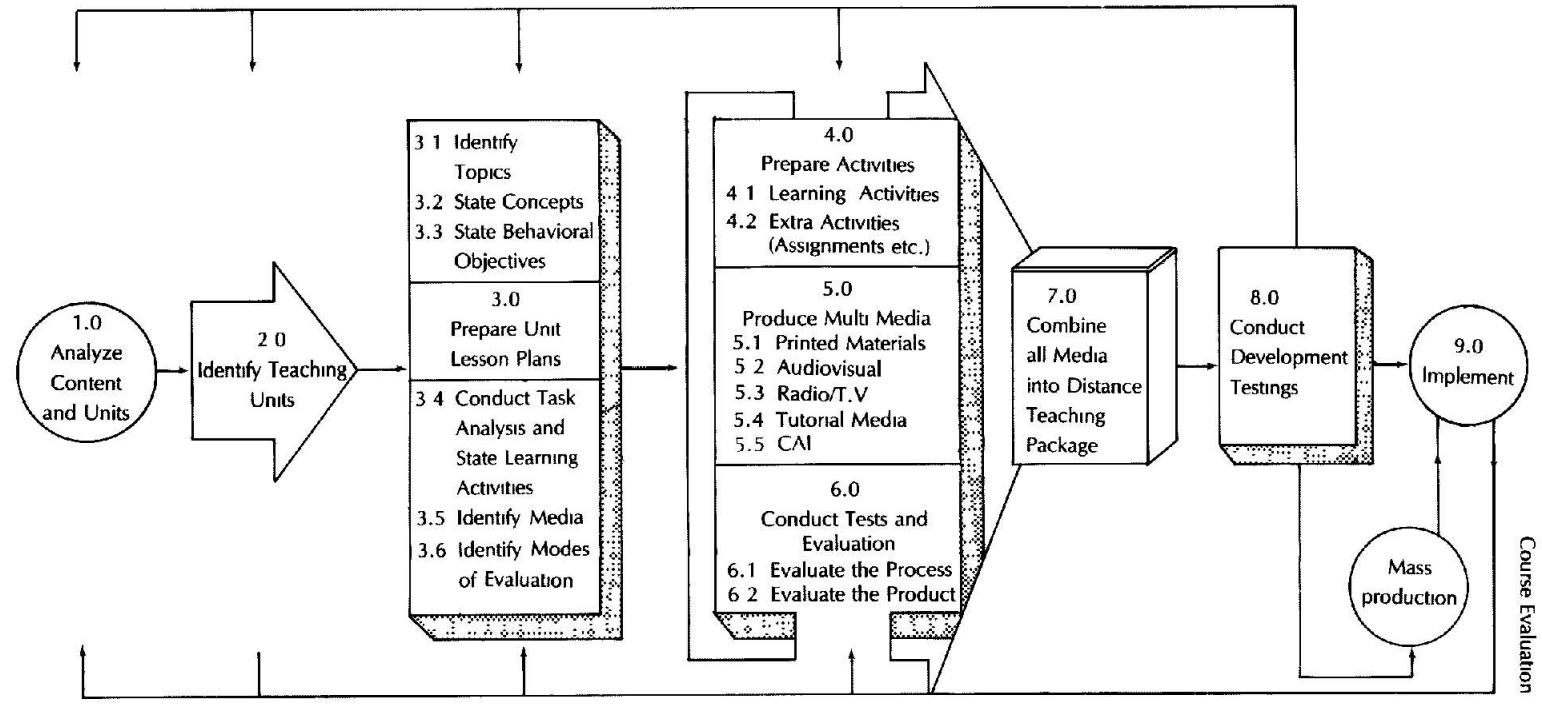
THE PRODUCTION AND USE OF PRINTED MATERIALS

In distance teaching systems using mixed media with printed materials as the core medium such as in the "STOU PLAN," the production of these materials is an important process and activity of the Distance Media Production System. This system can be graphically illustrated in the chart on page 20.

The production of printed materials for use in distance teaching can be carried out in various ways; for example, these materials might be in the form of conventional textbooks or lecture notes. The effectiveness of the printed materials in terms of helping the student to study on his own depends largely on the format and the way in which the content is presented. Special efforts were thus made to develop a format suitable for printed materials which were to be used specifically in distance teaching. One format in widespread use in distance education is the programed textbook, which is adapted from programed instruction. The production of this type of printed material aims at making the student an active learner. Thus materials of an interactive nature must be produced, and these include both a programed text as well as an accompanying workbook. Students who use this type of printed material will master the content in small increments, in accord with their study time. They must complete various activities or exercises as part of learning the content of each unit, and they will receive periodic feedback to indicate the extent of the progress in their studies. Thus they experience a series of successes in their self-study, and this encourages them to progress further in their quest for knowledge.

In the block system of the "STOU PLAN" every block carries 6 semester credits. Each of these blocks has a programed text and a workbook which are divided into 15 units, each of which requires approximately 12 hours of study time per week. Each unit begins with a unit lesson plan which spells out clearly the topics, concepts, objectives, activities, and evaluation methods for the unit. Then follows the presentation of the actual content, which is broken down into sections. In each section there are activities which the student must do in his workbook, and in each unit there is a pre-test and a post-test complete with answer keys in order to give the student feedback.

DISTANCE MEDIA PRODUCTION SYSTEM

		3.1 Identify Topics	4.0 Prepare Activities			

Diagram content:

1.0 Analyze Content and Units

→ **2.0** Identify Teaching Units

→ **3.1** Identify Topics
3.2 State Concepts
3.3 State Behavioral Objectives

3.0 Prepare Unit Lesson Plans

3.4 Conduct Task Analysis and State Learning Activities
3.5 Identify Media
3.6 Identify Modes of Evaluation

4.0 Prepare Activities
4.1 Learning Activities
4.2 Extra Activities (Assignments etc.)

5.0 Produce Multi Media
5.1 Printed Materials
5.2 Audiovisual
5.3 Radio/T.V
5.4 Tutorial Media
5.5 CAI

6.0 Conduct Tests and Evaluation
6.1 Evaluate the Process
6.2 Evaluate the Product

7.0 Combine all Media into Distance Teaching Package

8.0 Conduct Development Testings

9.0 Implement

Mass production

Course Evaluation

From STOU's experience in developing these programed texts for use in the university's distance teaching system, it appears that they have been quite successful and have accomplished their purpose. The methods of writing these texts is obviously more complex than that used for writing ordinary texts. However, if course writers are adequately trained before they commence their work, these academics from various fields can accomplish their task without undue difficulty.

CONCLUSION

In the development of distance teaching/learning systems employing a multi-media approach, the most important consideration concerns the blending or harmonizing of such media to permit distance education to become even more effective.

From the author's experience, the harmonizing of the print medium and the electronic media is of primary importance. The results of experiments conducted at Sukhothai Thammathirat Open University to date serve to confirm that the blending of printed materials and computer-aided instruction is a most interesting development, which promises to bring real benefits; and, if this process were to be extended and practised more widely, it would enhance considerably the effectiveness of distance education. Ultimately, on the basis of such information, it is conceivable that distance teaching will, more and more, come to rely on computers as the main instructional medium in the emerging Computer-Based Education (CBE).

References

[1] Michael J. Pentz and Michael W. Neil, *Education for Adults at a Distance*, Kogan Page, London, 1981, Chapter 4· pp. 97 - 125

[2] Walter Perry, *The State of Distance Learning Worldwide*, International Center for Distance Learning of the United Nations University, 1984

[3] Sukhothai Thammathirat Open University, *Focus on STOU* , Graphic Art Publishing, Bangkok, 1984

[4] J.H. Horlock, "A University Without Walls," *Media in Education and Development, Vol. 17 No 2* , June 1984, pp. 52 - 56