The Use of Printed Materials in Distance Education

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Introduction

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's 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 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. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) has conducted various types of campaigns to encourage member countries to adopt this principle in providing education. One academic publication of widespread interest is the book "Learning to Be,"[1] which UNESCO has had translated into many different languages. The most important feature of this book is the dissemination of the concept and principle of lifelong education. But the efforts

of UNESCO to promote this concept did not stop with the printing of "Learning to Be." In subsequent publications, such as "Thinking Ahead,"[2] which UNESCO published in 1977, the matter of lifelong education was particularly emphasized in the chapter on education.

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 meshing 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 establishment of open education using the distance teaching 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 3 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 is 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 considered to be the most important consideration.

Open Education featuring a distance teaching 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 emphasises various types of educational media, which result from the application of advanced knowledge or technology to education. The intent 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 assistance from the teacher. Correspondence education has thus been an important medium for expanding educational circles, extending the 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 now pictures as well as sound. The subsequent introduction of color TV has further enhanced the effecteveness 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 videotapes, 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 move 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 extent

of the efficiency and effectiveness of distance teaching involves analyz-

ing the extent of 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:[3]

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 economics 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-Media 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, and I understand that Korea Correspondence University follows this approach as well.
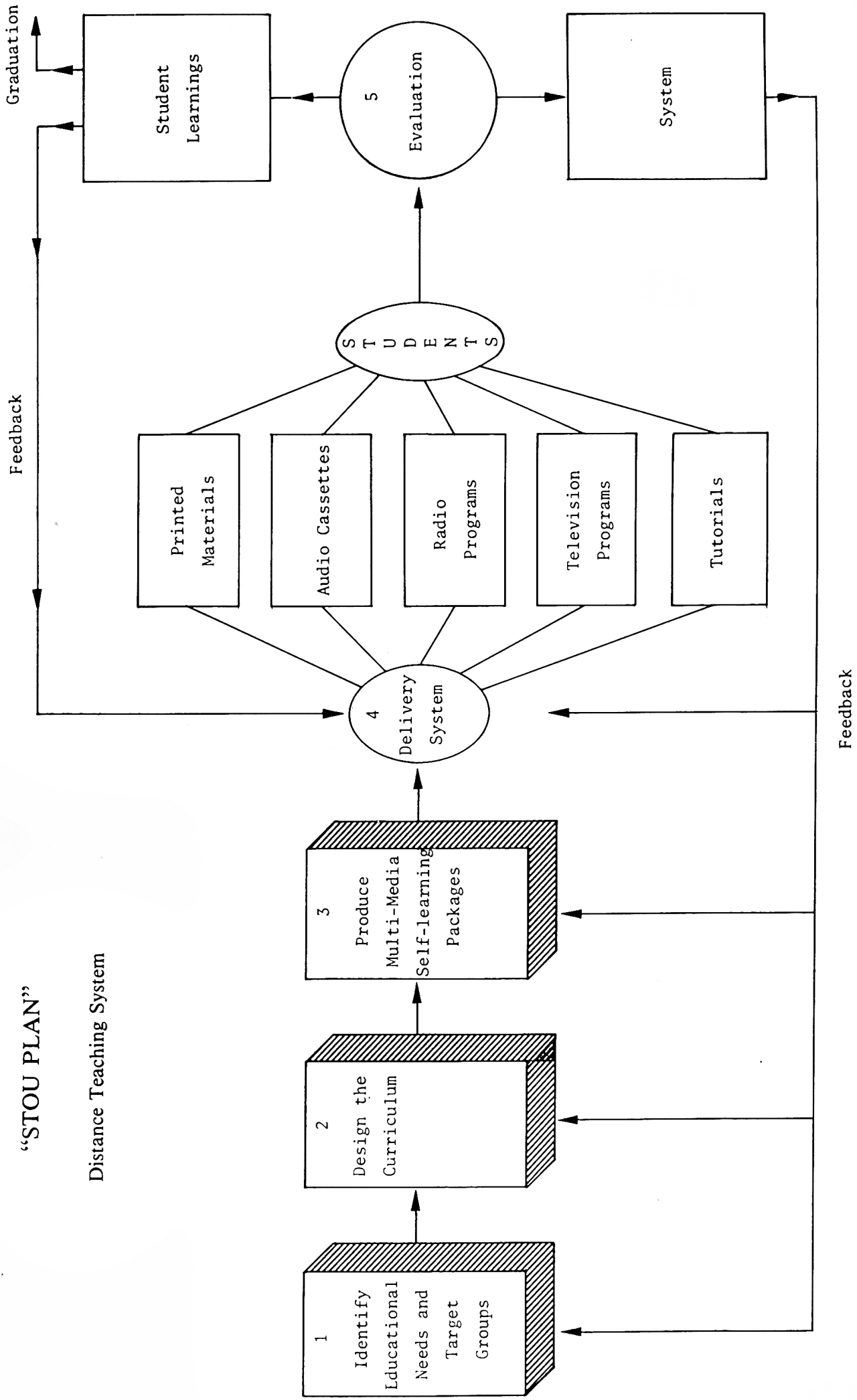
In fact, the development of instructional media for self-study in the form of mixing printed materials with other media actually occurred on a widespread scale even before the advent of the open universities. One well-known example of the mixed media approach is Linguaphone, which developed language lessons combining printed materials with records and subsequenly, 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.

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"[4] for Distance Teaching System, which is composed of 5 stages, can be concisely illustrated in the following chart :

"STOU PLAN"

Distance Teaching System

Box	Description
1	Identify Educational Needs and Target Groups
2	Design the Curriculum
3	Produce Multi-Media Self-learning Packages
4	Delivery System
5	Evaluation

Delivery System outputs:
- Printed Materials
- Audio Cassettes
- Radio Programs
- Television Programs
- Tutorials

STUDENTS

Student Learnings

Graduation

System

Feedback

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 inter-disciplinary 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 his study efforts; for in any one semester, they will

not have to study more than 3 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. The academic standard is thus the responsibility of a group of academics rather than of the 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, 4 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 covenient 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 singly 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 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 instructional materials. The excellence which exists in society is thereby utilized to the fullest extent. An additional benefit is that this working together as an acadumic team helps bring about a spirit of teamwork in administrative work as well, a great asses for the overall administration of the University.

The third stage involves selecting and producing the teaching media packages. The "STOU Plan" has chosen to use a mixed-media approach based on the 5 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.
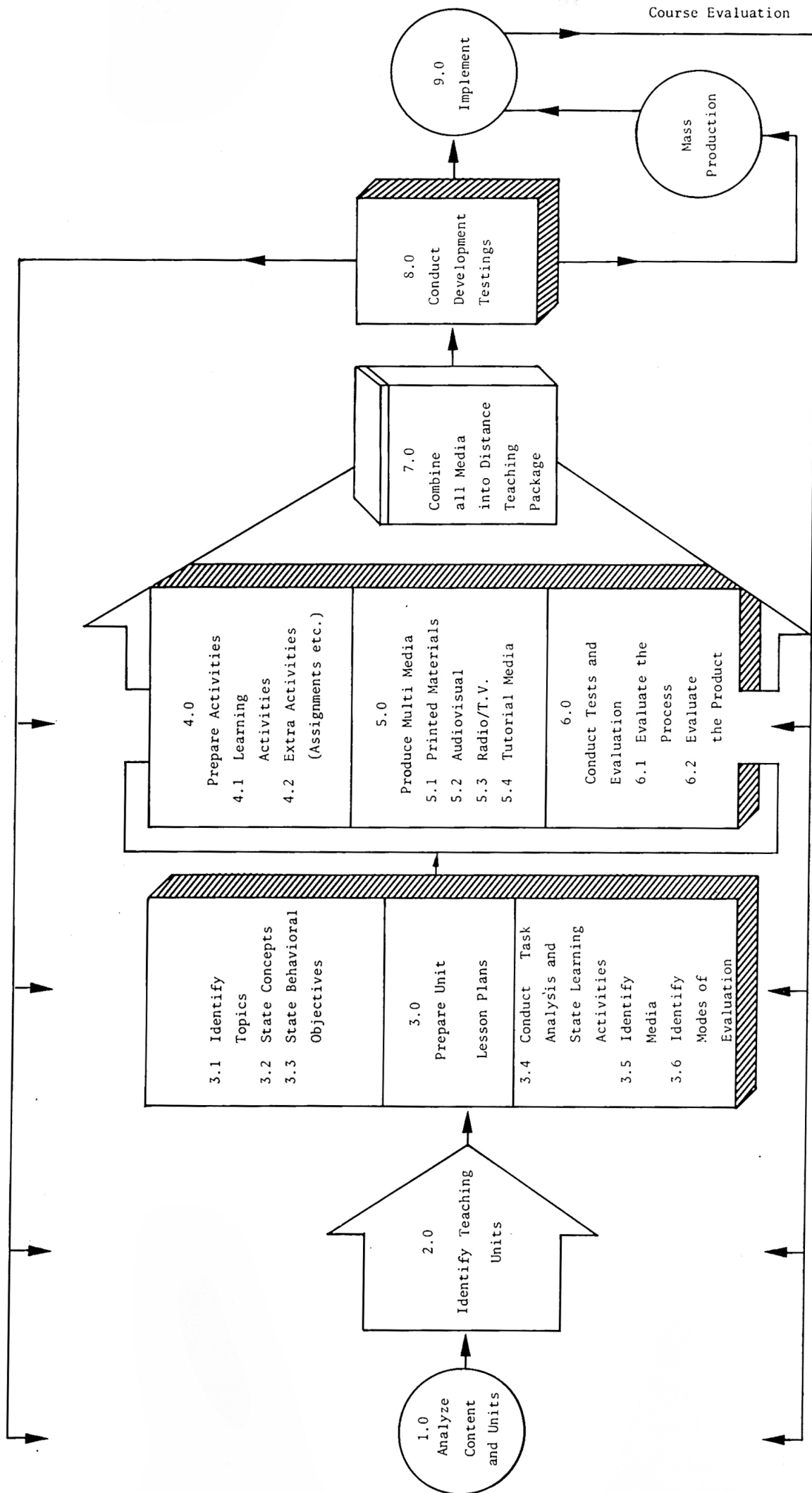
The fourth stage involves establishing delivery systems in order to communicate knowledge to the students. The printed materials and accompanying tapes are sent by mail to the student's home, and radio and TV shows are aired at the same time throughout the country. The tutorial sessions are held on weekends in local study centers located in each province. 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 following chart.

Distance Media Productions System

Course Evaluation

9.0 Implement

Mass Production

8.0 Conduct Development Testings

7.0 Combine all Media into Distance Teaching Package

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

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

3.0 Prepare Unit Lesson Plans
3.1 Identify Topics
3.2 State Concepts
3.3 State Behavioral Objectives
3.4 Conduct Task Analysis and State Learning Activities
3.5 Identify Media
3.6 Identify Modes of Evaluation

2.0 Identify Teaching Units

1.0 Analyze Content and Units

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 programmed textbook, which is adapted from programmed instruction. The production of this type of printed materials aims at making the student an active learner. Thus materials of an interactive nature must be produced, and these include both a programmed text as well as an accompanying workbook. Students who use this type of printed materials 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 guest for knowledge.

In the block system of the "STOU Plan" every block carries 6 semester credits. Each of these blocks has a programmed 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.

From STOU's experience in developing these programmed texts for use in the university's distance teaching system, it appears that they have been quite successful and have accomplishes 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 applying technology to distance education in the present day and age, the problem does not lie with a lack of media that can be used but rather with the selection of appropriate technology. While electronic media has advanced considerably and is being used increasingly in the field of education, print media still has a role to play which is no less important than that of electronic media. In distance teaching, print media will undoubtedly remain the core medium, for as J.H. Horlock, Vice Chancellor of Britain's Open University has said:

"For the Open University it is still the printed word which has primary, and for all the wonders of the new technology I cannot see it being supplanted in the immediate future.

"Books and other printed texts have great advantages over electronic media; they are portable, need no power supply, contain very large amounts of information within a compact format, lend themselves to 'random access' treatment and to easy cross reference. They can be delivered relatively cheaply..., and the skill required to use them is possessed by almost every member of the adult population."

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