Finding the Effective Instructional Technology for Distance Teacher Education in Bangladesh: Design, Delivery and Evaluation

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Abstract: The present research study was conducted on finding the effective instructional technology for distance teacher education in Bangladesh. It mainly brought to focus the implementation stages of education policy issues in general where use of some sort of technology was advocated and specifically getting further to the areas on use of Instructional Design related to production and use of text materials like radio-TV lessons and printed text materials for distance education. The specific focal point of the research was to make an evaluation on the actual stage continuation of the sequence of policy -design- delivery- evaluation, related to the innovative uses of technology in school science teaching and distance teacher education. The ID model and learning model formulated by this study need to be tested by future researchers.

Keywords: Instructional Technology, Distance Education, Teacher Education

INTRODUCTION TO THE STUDY

The present study is an attempt to draw a complete picture of the ground state- through- present picture about recommendation- design-delivery-evaluation stages of policy and technological information that is the basis of existing national foundation of 'distance mode secondary education programs'. This evaluative study report is hoped to create opportunities for better shaping of the related area in the implementation stage of the coming National Educational Policy 2021 as well as 2021 National ICT policy.

The study tried to identify the impact of the instructional design strategy on secondary science students and the trainees of distance teacher education program: B.Ed. Specifically it focuses on evaluation of policy implementation related to creation of learner space and learning environment in the ICT-based coursematerials.

An ever growing surge of active global interest in the fields of learning, media and communication is making it mandatory to formulate appropriate policies related to: overall education, ICT-based education, ICT-enveloped instructional design for all kinds of teaching aids and to serve students better in a non-traditional setting like distance education. This need will only increase as new media and technologies are continuouslyintroduced.

Background of the National Teacher Education Program by Face-To-Face Mode

Formal education system evolved around the European system of schooling and it was introduced in the first quarter of nineteenth century in this sub-continent. Teachers had to teach a good number of students and on a certain subjects. With the advent of time students were set to be prepared for the nation and it became evident that teachers needed to be trained to manage both the academic and the administrative part of the classroomsituation.

With a view to provide training to teachers first training school was established in the region in 1857 at Dacca (vernacular/elementary school). In 1869 and 1882 two more schools were established at Comilla and Rangpur respectively but in 1885 the school at Comilla was transferred to Chittagong Report, 1974.

Indian (Hunter) Education Commission of 1882 recommended separate teacher education programs for elementary and secondary teachers; recommending one year training program for secondary teachers. Later on in the Indian sub-continent six training colleges were established during the period 1886 to 1894 for secondary school teachers [1]. In 1917 Sadler Commission emphasized the importance of training and research on secondary teacher training.

The first teacher-training school in our part of the sub-continent-called normal school, and which later came under Pakistan was established in Dacca in 1905. In fact it was upgraded from its original form of vernacular school. At that time it was situated adjacent to the practicing school, Armanitola Government School. In 1920 it was transferred in respect of its academic courses from Calcutta University to Dacca University. An impression on teaching condition of

this Armanitola School can be gathered from the March 1914 Convocation Speech of the then vice chancellor, Sir Asutosh Mookerjee [2]:

> Since 1906, the schools and colleges throughout this province have been re-organized and that in many cases the re-organization has been of such a fundamental and far- reaching character as to indicate a veritable rebirth of the Institutions concerned. The teaching staff has been improved and strengthened all round, both qualitatively and quantitatively [2].

Up to 1956 normal schools used to train lower secondary teachers by a two year training program and the certificate was called Vernacular Mastership. According to the recommendation of the 1952 Committee normal schools were converted to junior training colleges in 1956. Up to 1966 these institutions were free to formulate the curriculum, to set examination policies. About fifty teachers a year were trained in the courses.

The First Five Year Plan of Pakistan recommended the up-gradation of the course to call it a Certificate of Teaching. At present the last sentence of the first paragraph of page 561 of the Plan reveals short of farsightedness - At present about 500 students receive this degree every year. With funds provided for strengthening and improving the existing training colleges in West Pakistan, and the opening of two new colleges in East Pakistan, about 800 new graduate teachers will be trained annually.

The last sentence of the same paragraph of this FFYP of Pakistan made some wrong prediction-
This is considered sufficient to meet the country's requirement of trained teachers.

If the number 800 of new teacher-graduates was sufficient in the 1950s as mentioned above then there wouldn't be any need for a new program like TQI-SEP B.Ed in 2007. In 1972 the junior training colleges were transformed into colleges of education and the study period was fixed at three years Report, 1974.

At present, secondary teacher education or B.Ed is one of the important sub-sectors of the education system of Bangladesh and it has a total of (government and private) 120 teacher training colleges with around 1,500 teacher trainers. The gross enrollment of these collegesstood at 28,156 in 2015. Institute of Education and Research of Dhaka University used to offer Diploma in Education, they stopped it to introduce a three-year B.Ed Honors Program, which was later transformed into a four year graduation program. The Education Commission Report of 2010 recommends introduction of four year teacher education program.

National Teacher Education Program by Distance Learning Mode

The professional education/training provided to higher, secondary or primary teachers to enhance their teaching skills by use of distance education or open and distance learning delivery system is termed as distance teacher education. Now- a- days one of the significant ways of strengthening the teaching profession is to use distance education or open and distance learning mode. This mode has widely been used in Africa and South Asia as part of the regular system of initial teacher training, to support curriculum reform, to offer continuing professional development to teachers, and to prepare them for new roles as head teachers, administrators or inspectors, or as teachers' collegelecturers.

In institutions in a number of developing countries- like, in our country, at Bangladesh Open University, distance education programs are quite popular as a second chance degree oriented study. Printed course material is the main text and it is supplemented by television and radio enrichment lessons. A number of face-to-face tutorial sessions are integrated into the system to provide two way real-time interaction for the learners.

Bangladesh Open University (BOU) [3] established by an act of National Parliament (with partial funding of Asian Development Bank (ADB) [4], through the School of Education (SoE) offers M.Ed, B/Ed and C.Ed programs by distance mode since 1992. Running of B.Ed the result of passing out of an Act in the Parliament and also the merger of an earlier government and donor funded project, Bangladesh Institute of Distance Education (BIDE); BIDE offered B.Ed by distance mode on experimental basis for three academic years since 1985 [5].

Since 2007, the School of Education (SoE), one of the six faculties of BOU directed by a government order is offering a new B.Ed whose curriculum was prepared by a government- donor funded project: Secondary Education Sector Improvement Project (SESIP). The reason behind this compulsion is government's decision to offer the same teacher education curriculum nationwide; by both face-to-face and distance mode. Among the innumerable private universities, until recently approximately ten private universities used to offer their own B.Ed/M.Ed programs [6]. University Grants Commission (UGC) recently put to stop this practice as it was not sure of the quality of these programs.

A range of organizational structures have been used here. International agencies may have influenced teacher education and the use of distance education within it. Both the Common wealth Of Learning and its franco phone equivalent, have been involved in the development of teacher education programs using distance education, and have been able to share expertise internationally in their execution. The World Bank has sought to influence policy on teacher education while several bilateral aid agencies in Europe have funded distance-education projects for teachers in Africa. They have brought to their funding certain conditions.

Renowned distance educator Desmond Keegan [7] says- Distance education is characterized by five elements:
- The separation of teacher and learner,
- The planning and preparation of materials under the influence of an educational organization,
- The use of technical media to unite teacher and learner,
- The provision of two-way communication, and
- The absence of the learning group.

Keegan's first element was later found to be not very effective and at present this 'separation' element is minimized by introducing computer-based synchronous and asynchronous interaction in distance education programs. Just a few years back from now it was an accepted fact that the hallmarks of distance education are the separation of teacher and learner in real space and /or time, the volitional control of learning by the student rather than the distant instructor and noncontiguous communication between student and teacher, mediated by print or some form of technology [8]. The traditional definition of distance education is though fast being eroded as new technological developments challenge educators to re-conceptualize the idea of schooling and lifelong learning. At the same time, interest in the unlimited possibilities of individualized distance learning is growing with the development of each new communication technology. Educational technologists agree that it is the systematic design of instruction which should drive the development of distance learning.

Internationally acclaimed distance educators have identified different characteristics of distance education, which eventually resulted in the emergence of a number of models in each field, such as use of technology, student interaction, evaluation, etc.

In the beginning period of her academic work at BOU the researcher was convinced that the course material production model of BOU followed Otto Peters model of 'industrialization'. But with time she found out that no Western model is rigorously followed by faculty members of the School of Education of BOU. Foe enriching her own knowledge she exploredquiteafewothermodels.Forthisstudyshefoundthatamodel-basedviewwhichshould be helpful to analyze the data of this research may have some resemblance to one of those presented by Hilary Perraton [9] in his three models-

1st Model- To provide education outside school, usually by means of correspondence courses for individual students working at home,

2nd Model- To use similar materials for groups of students in study centers, offering something like a school but at reduced costs,

3rd Model- To use distance-teaching methods within conventional schools in order to raise their quality.

It becomes evident to the researchers that the 1st Model is based on the long established correspondence system in which learners are completely separated from the instructors or teachers, and instruction is provided purely by means of correspondence courses. Studies showed that this model was not effective. This model has some inherent problems e.g. lack of predisposition toward learning, lack of access to libraries and absence of motivation. The difficulties encountered by the first model, according to Perraton [9], led to the development of the 2nd Model which provided study centers for groups of students, and the burden of instruction was carried out by correspondence courses with some radio support in some places. In the 3rd Model, distance teaching system is used to enhance the quality of conventional education. Broadcasting was extensively used to achieve this in some countries and there are countries such as American Samoa and El Salvador where television was used as an important component of conventional or traditional education. As reinforcing the quality and capacity of formal education has been an area of concern, distance teaching system is quite often used to enhance conventional curricula and instruction. Perraton's 2nd and 3rd models used radio and televisionextensively.

The researchers see through their professional work that distance education up to the recent past was defined as instruction through print or electronic communications media to persons engaged in planned learning in a place or time different from that of the instructor or instructors and with the advent of technology the situation is fast changing. The change is brought in effectively with the use of technology in the form of instructional technology.

Innovative Uses of Instructional Technology in the Delivery of Distance Education

Information and communication technology is an embracing concept that includes the systems, processes and people that are involved with technologically mediated communication. When products are thoughtfully blended with subject matter content (such as mathematics or science concepts or in open learning programs) for a specific audience in a specific educational context (such as a school or any open university), one is using "*educational technology*". Educational technology is a creative blending of *'idea'* and *'product'* technologies with subject-matter content in order to engender and improve teaching and learning processes. Educational technology is often associated with the terms instructional technology or learning technology. *'Product'* technologies are tangible; for example, computer hardware or software. *'Idea'* technologies are cognitive frameworks or schemes. Technology is fast becoming a compelling force that needs to be coupled with the curriculum to create an engaged learning atmosphere that allows learners to become skilled technicians with an endless passion for learning. Reading Internet-based research papers they see that with the use of technology students become engaged learners who are responsible for their own learning. They engage in the learning process by problem solving, reflecting, synthesizing, evaluating, and continuously applying their newskills.

As use of technology in the field of education is termed as instructional technology a suitable definition was found in that given by Berger and Kam [10]:

The systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction. It is the process of analysis of learning needs and goals and the development of a delivery system to meet those needs. It includes development of instructional materials and activities; and tryout and evaluation of all instruction and learner activities.

Ferrier's [11] following definition of technology is found suitable by the researchers for ownwork:

The tools which people use to aid their action in life [11], or as a design for an instrumental action that reduces the uncertainty in the cause-effect relationship involved in achieving a desired outcome.

This definition recognizes an aspect of reducing uncertainty and hence the important role information plays. Once information-seeking activities have reduced the uncertainty about an innovation's expected consequences to an acceptable level for the individual, a decision concerning acceptance or rejection will be made.

The researchers found that the above definition could be added to what Danielle, one time Assistant Secretary General of UNESCO (2001-2004) said about the importance of technology as some concrete ideas can be formed about the insertion of instructional technology in preparing course materials for distance learners – We are living in a world of people and machines. Good use of technology always involves people and their social systems [12, 13].

Professional knowledge, field level work experience and document reading the researchers found that there are two primary forms of communication utilized to deliver instruction to learners-synchronous and asynchronous. Asynchronous distance education is recognized for the great advantage of allowing time for reflection before responding [14], thereby encouraging critical thinking. The main distinction between the two is whether teachers and learners are participating at the same time or not. Attendance at numerous international level conferences there searchers found that distance education programs based on asynchronous methods use recorded instructional materials. These types of technologies allow participants to be separated in time and distance from the delivery of instruction. Thus, telecommunications systems, such as broadcast radio, television (including cable), or electronically stored media such as video, audio, and computer software are among the technologies that utilize asynchronous communication.

As is seen that the world wide use of technology is increasing at an incredible speed it is found necessary for the sake of the present study to scan documents and get a complete picture of use of technology in national level education.

The researchers found that Bates' [15] argument regarding decision-making on the choice of technology based on an analysis of questions are well justified. His questions were:
a. How accessible is a particular technology for learners, how flexible is it for a particular target group?
b. What is the cost structure of each technology?
c. What kinds of learning are needed? What instructional approaches will best meet these needs?
d. What are the best technologies for supporting this teaching and learning?
e. What kind of interaction does the technology enable?

It was traced that Haddad and Draxler [16] identified at least five levels of technology use in education: presentation, demonstration, drill and practice, interaction, and collaboration. Table-1 classifies some of these forms along with their level of interactivity in educationsystem.

Table-1: ICTs and their Potential for Education [16]

Technology	Outreach	Flexibility	Sensorial Stimulation	Real –life Interactivity

Radio	High	Limited	Audio only	Limited
Television	High	Limited	Audiovisual	Limited
Video	Low	High	Audiovisual	Limited
Computer	Low	High	Audiovisual	High
Internet	Highest	High	Audiovisual	Highest

With time the acceptance of these educational technologies by the instructional designers facilitated their inclusion in the preparation of distance education course components.

Learning theories play important role in the inclusion of Instructional Design (ID). Among the prominent theories at present behaviorism and constructivism play significant role in the Instructional Design process.

Reaching this point of fixing importance on proper learning theories at this point it seems necessary to the researchers to find the actual presence of them in the national level work.

Innovative Uses of Technology in Instructional Design at National Level
A report prepared during project period of Bangladesh Open University defines instructional design as:
Instructional design is the process of designing materials for effective learning. To be effective materials must satisfy criteria of several kinds- structure, format, style, presentation; all contribute to quality as well as academic content. Transforming content into a tool for effective communication with learners is the job of instructional design (BOU-CS 28).

When the researchers prepare a comparative picture in between the situation prevailing at their won work place BOU and developed or even developing countries they see it clearly that:
a. The rapid development of information and communication technologies (ICTs) and the move towards more knowledge intensive, interdependent and globalized societies create new challenges and opportunities for the design and delivery of education.
b. Policy makers at various levels and across a range of sectors, including education, believe that new technologies can make a significant contribution in solving difficult and pressing problems. UNESCO also gives a similar picture [12].
c. There is another side of this ever increasing inclusion- in distance education which is prevalent in developing countries at least- it is far more important to get these processes of pedagogical design and development right than to focus too much on the hard technologies. The hard technologies will change, and this is why distance education systems must ensure that the processes of design, development and delivery are robust and that they can accommodate short-term changes in hard technologies.

It is known that at the time when globally instructional design was in its infancy, the behaviorist approach to learning was very prominent. With the advent of the Second World War, there was a great need to train hundreds of thousands of military personnel in a short span of time. Prior to this, the use of specialized teaching machines was used as a method of standardizing instruction and training. This method was used in conjunction with the earlier work undertaken by Ralph Tyler on learning objectives, allowing for vast numbers of personnel to be trained in a standardized manner and in a relatively short time frame. It is thought that the heavy investment of the government into training, research and development was credited with the USA's victory in 1945.According to Leigh this in turn led to further research and development into the underpinnings or learning cognition and instruction [17].

Following the post war boom, the 1950's brought about further development in theoretical models of learning. Exponents at the time included Skinner and Bloom. The general systems theory of biological interactions attributed to Ludwig von Bertalanffy, was combined together with Bloom's taxonomy [18] and allowed for development of a systems approach to instructional and organizational development. Planners were then able to match content and delivery of instruction for organizations, individuals and groups. It was interesting to find that with the advent of the space race, the focus shifted from program development to entire curriculum development. In 1962 Robert Glaser combined the works of previous researchers and introduced the concept of instructional design. He developed a model which linked the analysis undertaken about the learner to the design and development of the required curriculum [17].

Combining this Western theoretical knowledge with their own personal job experience helped the researchers to see that the theoretical basis on which instructional models is based affects not only the way in which information is communicated to the student, but also the way in which the student makes sense and constructs new knowledge from the information which is presented. They found that the constructivist perspective describes learning as a change in meaning constructed from experience [19]. Constructivists believe that- 'knowledge and truth are constructed by people and do

not exist outside the human mind' [20]. Central to the tenet of constructivism is that learning is an active process. Information may be imposed, but understanding cannot be, for it must come from within.

Vygotsky's [21] theory of social constructivism, as opposed to Piaget's individualistic approach to constructivism, emphasizing the interaction of learners with others in cognitive development is very important for distance learners. Vygotsky's theoretical concept of the one of proximal development that learning is directly related to social development is quite appropriates for Bangladeshi distancelearners.

It became clear to the researchers that constructivist learning environment is characterized by–
   a.   Shared knowledge among teachers and students,
   b.   Shared authority and responsibility among teachers and students,
   c.   Teacher's new role as guide in instruction,
   d.   Heterogeneous and small groupings of students [22].

The researchers became convinced to explore the national situation and form precise idea about ID in the national filed.

Design-Delivery-Evaluation Based ID work
The following functions of an ID designer explains the reality of ID:
   a.   Instructional design and development must be based upon some theory of learning and/or cognition, effective design is possible only if the developer has developed reflexive awareness of the theoretical basis underlying the design.
   b.   From a number of suitable propositions a distance educator/instructional designer should construct a set of instructional principles which can then guide the practice of teaching and the design of learning environments in distance education.
   c.   The designer must confirm that design practice must do more than merely accommodate the constructivist perspectives', they should also support the creation of powerful learning environments that can optimize the values of the underlying epistemological principles.

The learning theories related to the use of innovative technology in the instructional design of distance education is to be based on actual passage through the three broad stages; namely: mass instruction methods, individualized-learning methods and group learning.

And in this respect the researchers find Elton's Learning Model elaborate and realistic. One of the first people to classify learning-teaching methods was Lewis Elton, Britain's first professor of educational technology [23]. In a seminal paper presented at the 1977 Annual Conference of the Association for Educational and Training Technology, he described the three classes as 'the dependent mode, the independent mode and the inter- dependent mode', reflecting the radically different roles of the student in each. He also contended that the entire post-war evolution of educational technology could be described in terms of the development of these areas, as shown in Figure-1.

While thinking of working in the area of instructional design related to distance education tried out in Bangladesh perhaps Elton model is perhaps one of the best fit. It gives one clear idea as to the evolution of use of technology: in the education field of most of the developing nations international policies are often forced on without much needed groundwork.
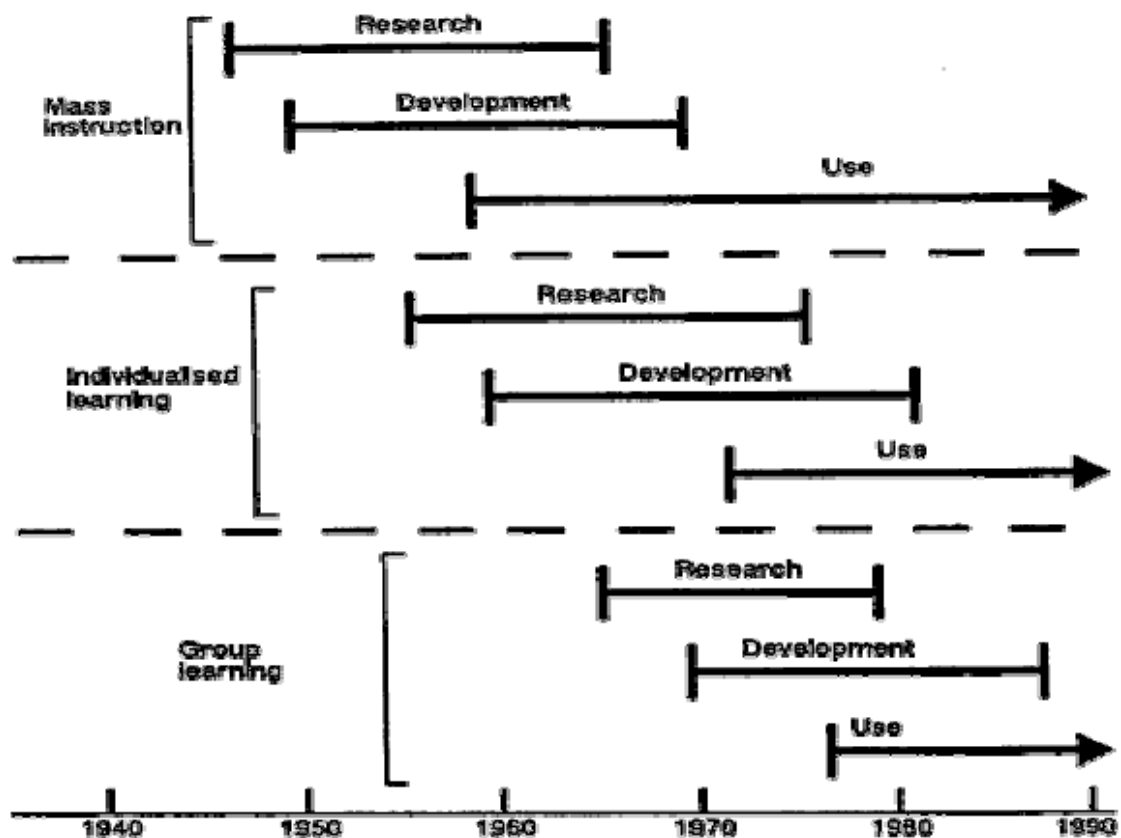
Fig-1: The Elton Model of 'Technology in Education'

Elton identified that the use of technology in education (in the developed world) had undergone a progressive change of emphasis since the end of the Second World War, when it first emerged as a discipline in its own right. Initially there was a concentration on the techniques of 'mass instruction', then a move towards 'individualized learning', and finally, during more recent years, a move towards 'group learning'. In each case, he identified three broad overlapping stages in the general development: research phase, development phase and use phase. Some important outcomes were the development of basic mass-instruction tools like the overhead projector and 35mm slide projector, and the increasingly widespread use of 'hardware-based' techniques such as film, radio and television broadcasting and closed- circuit television.

But, according to Elton, 'mass instruction' movement failed to live up to its early promise, it was totally unsuitable for achieving many higher-cognitive objectives, and were almost completely passive, enabling virtually no student involvement to take place. Nevertheless, educational broadcasting worldwide continues to grow in importance. Various other techniques and hardware systems that come under the general heading of 'mass instruction'continue to constitute a very important section of the educational armory available to the modern teacher.

B. F. Skinner's (Burrhus Frederick Skinner) elaboration of the theory of reinforcement and his advocacy of its application to learning helped to establish the behaviorism and Programmed Instruction Movement caught the attention of the researcher. Programmed Instruction is characterized by clearly stated behavioral objectives, small frames of instruction, self-pacing, active learner response to inserted questions, and immediate feedback regarding the correctness of a response. Individualized instruction in essence replaces the teacher with systematic or programmed materials. It can be instruction bases, print-based, computer- based, or can use other media as long as the instruction is based on the concepts listed here. It is linear, in that the author of the materials decided what step to present next, and that step is presented, no matter what the learner wants. Although logical subject matter is easier to individualize into programmed materials, researchers have not found any subject that could not be programmed. The researcher found that in 1958, Skinner built a rote-and-drill teaching machine and individualized instruction was originally presented in book form. In order to prevent students from looking at the answers in the books ahead of time, Program Instruction became later automated by inserting it into a teaching machine. Skinner's work has also had wide influences on other fields, such as Organizational Development. Skinner was also interested in a teaching machine. He conceptualized a teaching machine for the classroom for use by individual students [24]. Skinner's elaboration of the theory of reinforcement and his advocacy of its application to learning helped to establish the Behaviorism and Programmed Instruction movement.

Design-Delivery-Evaluation stages in the Preparation of Course Materials of Open Learning

Transforming content into a tool for effective communication with learners is the job of instructional design. Instructional design to her becomes the process of designing materials for effective learning. And to be effective for distance learning, materials must satisfy criteria of several kinds: structure, format, style, presentation all contribute to quality as well as academic content. Although ID models and processes abound in the developed world the majority there follow the same basic stages of -design, delivery/development, evaluation and revision.

The design stage focuses on gathering information to help understand the instructional gap between what is and what should be. The steps include defining the problem or need, understanding the audience, and identifying instructional goals and objectives.

In the delivery preceded by development stage one is to create a content outline based on the instructional problem, the audience analysis, instructional goals and objectives, and an understanding of the desired course content. Next, the instructor should review existing materials. Perhaps the greatest challenge facing the distance educator is creating student- relevant examples.

The primary purpose of evaluation is to provide information to decision makers. There are two approaches to evaluation: formative and summative. There is room for improvement in even the most carefully developed distance-delivered course, and the need for revision should be anticipated [25].

Among a number of characteristics identified by various authors, the following two seem to the present researchers to bear significance for the learning process:
  a. 'Good' Problems- Constructivist instruction asks learners to use their knowledge to solve problems that are meaningful and realistically complex. The problems provide the context for the learners to apply their knowledge and to take ownership of their learning. Good problems are required to stimulate the exploration and reflection necessary for knowledge construction.
  b. Collaboration-The constructivist perspective supports that learners learn through interaction with others. Learners work together as peers, applying their combined knowledge to the solution of the problem. The dialogue that results from this combined effort provides learners with the opportunity to test and refine their understanding in an ongoing process.

It was found that induction of learner/learning space and learning environment is very important in the making of distance learning course material as:
  a. 'Space', whether physical or virtual, can have a significant impact on learning. 'Learner Space' (LS) focuses on how learner expectations influence such spaces, the principles and activities that facilitate learning, and the role of technology from the perspective of those who create learning environments: faculty, learning technologists, administrators. The effective design of 'learner spaces', whether a classroom, a laboratory, a library or a distance education setting like print, radio, TV lessons- can enhance learning. The "design of learner spaces" goes beyond the physical to include the virtual. It is a combination of technology, pedagogy, learning science and physical space.
  b. In a "learning environment" (LE), there is always some stimulus or goal of learning. In Dewey's term, it is the 'problematic' that leads to and is the organizer for learning [26].

There are two primary forms of communication utilized to deliver instruction--synchronous and asynchronous. The main distinction between the two is whether teachers and learners are participating at the same time or not. Distance programs based on asynchronous methods use recorded instructional materials. These types of technologies allow participants to be separated in time and distance from the delivery of instruction. Thus, telecommunications systems, such as broadcast television (including cable), or electronically stored media such asvideo, audio, and computer software are among the technologies that utilize asynchronous communication.

According to Gagne instruction is normally regarded as a system of independent elements that facilitate intentional learning [27]. Through the two theories- behaviorist and constructivist, effective designers usually start with empirical knowledge: objects, events, and practices which mirror the everyday environment of their designatedlearners.Then, with a firm theoretical grounding, they develop a presentation which enables learners to construct appropriate new knowledge by interacting with the instruction. New developments in technology stimulate practitioners of education system to return to design and consider how new technological tools can help improve the current status of education. It is evident that potential of each technology varies according to how it is used and bywhom.It is seen by the researcher that unless technologies are integrated as part of a profound shift in the education process from teaching to learning and from supervision to facilitation of learning, they are going to remain a marginal and costly add-on [28]. This belief that technology is an "add-on" encourages the thinking that technology tries to bring

about more efficiency, equity, and cost-effectiveness without helping towards the realization of the more important systemic changes leading to structural thinking and the re-engineering of the entire education system.

Researchers find that the task of exploring the national situation becomes more focused accepting the comment of Masood [29].

In the1960s and 1970s, the educational technology field was heavily oriented towards applying behaviorist notions to the design of instruction. At the same time, cognitive information processing theory was emerging as the dominant paradigm in educational psychology. From the 1960s to 1980s, Gagné's evolving "theory" of instruction, integrated cognitive with behavioral views [30]. In the 1980s and 1990s, computer technology dominated the field, while in educational psychology, theories of constructivism and situated cognition offered new ways of thinking about instruction. More recently, academia has become highly dependent on the Internet for administrative purposes as well as for teaching and research.

RECOMMENDATIONS
Recommendation #1
Need of Distance Education Policy. It is feared that the objectives set for BOU in the Act passed by the National Parliament in 1992 are taken by both the government and the BOU administrative authority as equivalent to policy on distance education. If this remains the case then it needs to be substantiated by adding many more important elements to make it precise, up-to-date. And there must be an apex body to make this much needed updating which has to start playing the role of leader hence forth.

Recommendation#2
Welcoming Teachers-Instructors' Positive Attitude towards use of any Innovative Technology. The engagement of innovative technology/ICT in learning alters the traditional teacher- student relation, and as a result, there come changes in the roles of teachers/tutors. It has been felt that BOU teachers' attitudes towards ICT are connected to socio-cultural, professional and technological barriers. All faculties, be them fulltime faculty member, part time tutor or audio-video lesson presenter at SoE must be skilled in the use of technology for learning, and must have consistent access to professional development in the support of technology use in teaching and learning.

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