

Research in Distance Education and Open Learning in India

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Introduction : The history of Indian distance education and open learning is not very old but the pace with which it has developed is quite encouraging. The development of distance education and its research can be studied in three Paradigms viz; *changes in society, changes in education and shifts in distance education research.*

A) Paradigm : Changes in Society

Radical changes in distance education are unavoidable : Communication technologies have influenced all walks of life-recreation, business, production, warfare, politics and education. Today, technical and social changes are coming *so fast* that they demand radical adjustments in the field of education. We find that this impact is conspicuous in distance education, as the processes of distance education are excessively technology-driven. Common sense and ad-hoc decisions cannot cope with the complexity of implications of communication technologies. The goal of harnessing the advantages of this technology is possible only if organized research is encouraged. Some friends ask native questions like can't we conduct one-time research in the area of educational technology? Answer is no! Technology and even the context situations are changing continuously. The users of technology are changing. The relationships between technology and the people are changing on continuing basis. Hence, applied research has to constantly review the relevant implications for education.

Dilemma of standardised education triggered by mass technology : Mass technologies demand large-scale application of uniform programmes. Economic implications dictate many a decision. Changing societal trends like: (a) families are getting restructured, (b) contents and style of entertainment and leisure are getting transformed, (c) community life is shaping differently, (d) new activities for citizenship have emerged, (e) health clubs and resorts are using alternative approaches and tools, (f) *life styles are changing*, (g) home-working is on the rise, (h) women have entered work force, (i) dissatisfied groups are creating social upsurge, and (j) increasing unemployment and job deployments have created havoc in the life of workers, and many other trends have challenged stable societies. Some of the features of technology like--increasing power of machines; decreasing power/cost ratio; convergence of telecommunication; fast track developments in homes and at work; developing public

network--are pushing paradigm shifts in education. Two features--easy availability of *multimedia* and penetrating inroads of *Internet* of technologies--have influenced distance education in many ways. Some of the proactive systems of distance education are responding fast for the deliberate creation of new models for alternate education.

Way to design alternative models of education : Before we enter into analogy-mode of creating new models we have to agree for desirable characteristics of alternative models. Two such characteristics could be--(a) flexibility of technology and (b) availability of controls/initiative with the users. Alright, let us come back to our search for alternative models of education. The scenario around prompted us to look at other models of information-transfer. Based upon such prompts, we chose five alternative models of education viz.-- (a) 'telephone-exchange-model-education', (b) 'radio-station-model-education' (c) 'post-office-model-education' (d) 'newspaper-model-education', and (e) 'library model-education'. We know that these models vary in their 'speed of communication of information' and 'freedom of using controls of learning'. There are many a types of freedoms viz.-- initiatives to learners, choice of discussion topics, timings of telephoning, duration of dialogue, frequency of talking, multiplicity of interactivity, facility of learner-centeredness, role exchanges between providers and learners, and many more. We find that 'telephone-exchange-model-education' looks attractive. But, the operational part of this model needs a support system. We have to carry the accompanied baggage of this model for some time. After choosing this 'telephone-exchange-model-education', our accompanied concerns will be--(a) to prepare quality materials, (b) to worry about preparing quality of teachers/providers, and (c) to improve the nature of interaction between the learners and providers. Will these concerns be a perennial burden ? No, after some time, we may find that the system will take care of itself.

Traditional models : Out of these three traditional models--'library model-education', 'post-office-model-education', and 'newspaper-model-education' which one should we prefer ? The 'post-office-model-education' looks attractive. We know that 'post-office-model-education' can provide more freedom to the learners to initiate their actions. The 'newspaper-model-education' learner does not provide this facility of learner-controls under the present circumstances. Compared to 'newspaper-model-education', even the 'library-model-education' is a little superior where the learner initiates his/her actions. Kindly note that I am not undermining the importance of other models. Each model has its own strength. Today Internet is emerging another model and may supercede all other arrangements. Application of these models will depend upon socio-cultural and environmental factors that tend to vary from place to

place, and people to people. We need to research upon these models and their requirement.

Deliberate transformation of science into technology : Research findings by themselves have no direct contribution towards educational technology. We know that science by itself could not become technology. We had to provide room for engineering for technology development. In the same fashion, we have to undertake research for transforming pedagogical principles into communication technology. Sometimes multiple steps are involved in arriving at the desired goals, like--from cotton to yarn to clothes to garments. Educational research will have to be provided with legitimate support devised over multiple steps and stages. Pedagogy is in its infancy. Over the years, a few cynics have pooh-poohed it. Successful evolution of open education will necessitate the promotion of pedagogical research for launching new programmes of distance education. We need to act deliberately.

Provide individualised environment of learning in distance education : Learning is an individual act occurring in a private or in group setting. Teachers can facilitate learning but teachers can learn on behalf of learners. Learning process is always active. We ought to understand that the socio-cultural and technological factors have deeper implications for facilitating individualised learning. Therefore, we should provide technologies that can facilitate active and individualized-learning environment. The issue of providing individualized environment should be examined for pedagogical implications. Organized research in distance education has to come to our rescue.

Distance education research is at infancy stage : What is the position of research in open - education in India ? This question is important for planning our future actions. Based upon the seriousness of the problems, and the status of the available resources, we need to take policy-decisions in favour of organized-research. Panda, Satyanarayana & Sharma¹ (1996) asserted that research in distance and open education in India is still in its infancy. In spite of speedy expansion of distance education in India, the corresponding inputs for research have not been provided yet. Nevertheless, during the past three decades or so, a small beginning has been made.

Research in Distance Education

Improve research inputs : The system of open and distance education is, by its very nature, geared to meet the challenges posed. Yet, it must be understood that the system is quite new, young and has to be constantly guided to suit the changing needs of individuals and the societies. Distance education system needs to adapt and keep

pace with : (a) the constant advancements on the technological front, (b) amazing expansion of researches on human brain, (c) emerging diversity of patterns of human organizations, and (d) educational impact of political, economic, social, and cultural factors. Recently, we had organised a few discussions with the faculty members of open universities for knowing the scenario of research. A group of faculty members introspected and reviewed their research roles. They discussed the research - issues related to the areas of research, importance of research, research policy and so on. Following issues have emerged out of these discussions :—

- i. **Integrate the discipline and systemic frameworks of research :** While agreeing with the importance of systemic research, the faculty members were of the opinion that faculty members should also undertake research studies in one's own subject discipline. Research will help improving effectiveness of student learning. In the university, the act of teaching through distance mode could not be divorced from research. If that happened then collaborative research would become a useful tool to improve our efficiency. Also, within one's own discipline there was a need to take stock of the kind of research that had been done.
- ii. **Generate knowledge and then packaging of knowledge :** Open universities are first universities and then in the second place they are said to play their role through open mode. There is no need to create contradictions between the conventional and open universities. Open is not the substantive noun but it is an adjective. There is no need to create contradictions between the conventional and open universities. Like other universities, the faculty of open universities has dual role of generating knowledge and then packaging of knowledge. But some of us have emphasized that open universities should focus on packaging of knowledge. At the most, research may be undertaken in systemic areas. Contrary to this a few others have thought that it was necessary to undertake discipline-based research that would help in generating discipline-related knowledge. They argued that the interdependence between teaching and research has to be recognized. We felt that convergence of teaching and research over two types of universities was a necessary condition of growth.
- iii. **Rigor is needed in research :** The systemic research that has been undertaken so far was an apologia for research. It seemed that such research had not

addressed even certain basic questions in distance education. More rigorous research was, therefore, necessary. It also seemed that as professionals we were not addressing policy initiatives from a research framework.

- iv. **Support organized research :** While open universities like IGNOU and others have paved new paths for innovative courses, which had gained acceptance and recognition, there is now need to create a nurturing environment for research. There is a need for supporting organized-research leading to degrees and for pursuance of knowledge in general. Thematic priorities of research areas can be worked out without Distance Education Council and individual open university.
- v. **Academic uses of teachers' time :** Some of the existing constraints of course design are hampering research. It is felt that the time between the planning and launching of course is very short. This is because there is the pressure of launching new courses. As a result, teachers are losing academic flavor. They are becoming managers. The pressure on the faculty members is ultimately taking its toll. They are becoming generalists and not specialists. Time had now come to redefine our roles and especially research the roles.
- vi. **Teachers are willing to introspect :** Members of open education have realized that time has come for introspection. The general discussion and spirit of introspection has been constructive. We ourselves should ask about what were our responsibilities. We should also search our careers and see if we have asserted ourselves as professionals. What are our missions as researchers ?
- vii. **Develop policy framework of infrastructural support :** We need to develop policy framework for research in open education, offer administrative support, create infrastructural facilities, attract more researchers, motivate student researchers, prepare new researchers, activate our faculty members, prepare supporting literature, create network for collaboration, and provide adequate funds. How do we go about ?
- viii. **Use of technologies for distance education :** Distance education is a method and a new tool of organizing teaching for those who do not otherwise access to face-to-face mode of education. New information and communication technologies are highly pervasive. The reach of TV and radio has gone beyond the national boundaries. Computers can allow flexible paths of communication and transformation of information. These technologies reach quicker and the

unit per capita cost of communication is lower. These technologies are now governing the educational scenario of distance education. Many of us feel that the role of new communication technologies is crucial. If applied properly, they can meet the needs of the knowledge-poor communities, the un-reached regions the isolated persons and the marginalized groups. Research has to assist us. Thus, the scope for research in distance education cannot be over-emphasized.

- ix. **A different perspective :** The IGNOU and other open universities have been commissioned to develop innovative programs that are not offered by traditionally by institutions of higher education. They have been given the mandate of providing access to higher education particularly to the disadvantaged groups. The peculiar nature of open universities necessitates that we should enhance the relevance and efficacy of higher education through multiple modes. Our research concerns should, focus exclusively on emerging issues relating to the enhancement of effectiveness of the distance education system as a means of delivering higher education to varied clientele groups.
- x. **Develop collaborative research with campus/traditional universities :** Open Universities have to have the trappings of a conventional university and provide some basic infrastructure/laboratory facilities for promoting research. Presently, a few open universities have earmarked marginal funds and introduced research schemes that provides facilities to faculty members wishing to undertake research studies. The efficacy and adequacy of such a scheme needs to be re-examined so that a conducive environment for undertaking research is created in the open universities.

Areas of Research

Identification of areas of research: Identification of the areas of research may include activities like, scanning of related literature, studying the research trends, consulting experts, analyzing the processes of the system, and so on. These reports are useful for knowing the status of research and then to arrive at guidelines for future actions. Firstly, we are reporting below a few of the review studies. Secondly, the outcomes of two brainstorming sessions have been given. Thirdly, the outcomes of a few seminars too have been considered. Fourthly, we have given one useful reporting from the Internet. The sequence of these reports follows a conceptual path and not a chronological sequence. These attempts are made in India and elsewhere.

A Quick Overview of Reviews and Critiques

Table 1:

Authors/Source	Coverage	Remarks
First attempt by- Panda, Satyanarayana & Sharma ²	Area-wise and levels-wise categories of research studies are described; have also commented about the nature of persons and agencies undertaking research	Could have included research papers, and articles
Second attempt by- Kaul Lokesh and Dash, N.K.	Have commented about identified areas of research and have suggested methods of quality assurance	Emergence of problems could have been derived from multiple/other sources
Third attempt by- Ignou-Unesco Chair	Identified issues in nine areas of systemic research viz., need assessment; studies: structures and components; preparing plans; process studies; media and interactivity; programming; collaboration and networking; research; and financing	Covered distance education process; should have considered empirical position of research
Fourth attempt by- Seshratnam, C.	Has attempted to identify broad areas on which research needs to be promoted intensively	There is need of developing conceptual framework
Fifth attempt by- Hyderabad group	Identified training needs, opportunities and development of potentialities of women learners, self-help groups, developing bridge courses, and so on.	Studies can be arranged in terms of a conceptual framework.
Sixth attempt by- Nashik group Joshi and others	Planning stage, Development stage, Production stage, Delivery Stage, and evaluation stage.	A neat framework; they suggested studies and appended them in their report

Seventh attempt by- Passi UNESCO Chair	Why inter-disciplinary approach, orientation of personnel, supporting research, research laboratories, guides and other personnel, and research dissemination,	A unique way of looking into the processes of research; technique of meta research is used
Eighth attempt by- Calvert	Researches in distance education are sporadic; suggested input-process-output as a conceptual framework.	A neat framework is provided, empirical studies are missing
Ninth attempt by- Passi UNESCO Chair	Research issues in the process of distance education have been clustered in five areas	Looked at research areas from an alternate frame
Tenth resource-Internet report—ICT and education	A Philippines member posted a short essay on “Why the Internet is a poor learning environment”.	An interesting instance of <i>what happens in the field</i>

First research attempt by Panda S.K., Satyanarayana P & Sharma R.C.³

Panda and his colleagues (1996) have developed a trend report about distance education research. They have identified 152 studies. Area-wise and level-wise categories of research studies are described below :

Table 2 : Area-wise Level-wise Categories of Research Studies

Areas	Institution at Projects	Private Projects	Master's Dissertations	M.Litt./ M.Phil. Dissertations	Doctoral Dissertations	Total
Concept, growth and development	5	2	2	0	2	11
Curriculum/ course planning & development	2	1	0	3	2	08
Instruction/ teaching	4	12	0	2	2	20
Media and technology	4	4	0	0	0	08
Learner and learning	13	27	2	3	8	53
Institutional policy and management	1	1	0	1	2	05
Economics of distance education.	6	7	0	0	3	16

Evaluation/ program evaluation	13	1	2	1	7	24
Staff development	2	4	0	1	0	07
Total	50	59	6	11	26	152

The above table indicates areas of research relate to the concept, growth and development, curriculum/course planning and development, instruction/teaching, media and technology, learner and learning, institutional policy and management, economics of distance education, evaluation/programme evaluation, and staff development. The maximum research studies that have been undertaken are in the area of '*learner and learning*' followed by '*instructions and teaching*'. There are a very few studies in the areas of '*institutional policy and management*' and '*staff development*'. The data given in the table-II indicate that two-third of the research is conducted in the form of 'institutional projects' and 'private projects' whereas, one-third research in distance education is '*degree oriented research*'. Of course, we can find that investigators undertake maximum number of research projects in their private capacity. Why so? Perhaps, the researchers have felt a strong need for research and development in distance education. We should understand that this situation does not delimit distance teacher to undertake one's own private research, it is the same academic who would eventually work for the institution on the institutional project(s).

Undertake institutional distance education research:—Panda and his colleagues (1996) have mentioned, "the controversy between systemic research and discipline-based research in distance training institutions notwithstanding, the utilization potentials of research would be enhanced once it is institutionally sponsored. Given the ground reality in the sector of higher education in general and distance teaching institutions in particular, it is the understanding and visionary leadership with strong commitment to the system which can initiate and help to grow institutional distance education research as an on-going process and as a built-in mechanism within the framework of distance education institution or network of institutions." They have also asserted that there is need to consolidate and expand the system for coping with the future demands of the learners. Research will assist future learners. It is, therefore, necessary to undertake more and more research on different aspects of the system, such as :

- o evaluating the sociological impact of distance education.

- development and delivery of self-instructional materials and its try-out on the target groups.
- examining the procedure of assessing students' assignments and their turn-around time.
- organizing well managed student support services.
- integrating technology features with communication.
- designing staff development models.
- strengthening policy-making bodies.
- examining credibility and accountability.
- range and relevance of course offerings, relevance to societal and learner's needs.
- outreach, particularly among the hitherto neglected sections of the society like women, elderly persons, economically backward persons and those located in remote areas.
- networking in areas like course materials, staff development, student support services, organizing dual-mode learning by giving freedom to learners to complete some courses from distance and some from the conventional systems.

Second research attempt by Kaul Lokesh

Kaul (1997)⁴ in his trend report on 'open and distance education' in Fifth Survey of Educational Research has observed and commented that classified areas of research may help the researchers in selecting such problems that demand immediate attention. The problem areas can be :

- identification of the academic, professional and vocational courses keeping in view the needs of various target groups, including deprived sections of the society with the help of comprehensive survey studies.
- development of course materials and their efficacy through experimental and follow-up studies.
- orientation and training of teachers, administrators, and other supporting staff in distance education using various models developed through experimental and longitudinal studies. These models may be confined to script writing, editing, organization of personal contact programs, evaluation of assignments, computer applications, office management, production of audio-video programmes, choice of media and communication technology.
- augmentation and strengthening of student support services, improvements in the delivery system, decentralization of administration and extensive use of communication systems need to be studied using the experimental and the case study approaches.
- development of formative and summative models for evaluating performance of distance learners with the help of well designed experimental studies.

- in most of the developed countries, the 'Quality Assurance Activity' has been formally initiated, both at the institutional level and at the apex level. Therefore, it is necessary that similar steps may be taken in India to ensure that the quality of the educational provision made in the distance education institutes in conventional universities and open universities is routinely monitored and the results of such monitoring disseminated. Since quality assurance procedures in the context of distance education are still evolving in many countries, it would be worthwhile to launch pilot research studies/projects using longitudinal-experimental research designs to arrive at an agreed and knowledge based set of guidelines/parameters.
- cost-effectiveness of the ongoing programs of distance/open education in relation to institutional costs and private costs need to be studied. In the 'institutional costs' we may indicate both recurrent costs (staff salaries and benefits, training materials, utilities, maintenance of facilities, staff training, student services, etc.) and capital costs (annual costs of buildings, equipment, and vehicles, etc.). The 'private costs' may include both direct costs (tuition and other fees, room rents, books, supplies and transportation) and 'indirect costs' which pertain to earnings foregone as a result of taking the course.
- evaluative studies pertaining to organization, methods, producers, and results in terms of the learning outcomes of distance learners, and the impact of distance/open education on the socio-economic development of various target groups deserve special attention for planning and policy-making.

Dash (1998)⁵ made another effort to visualize research possibilities in different aspects of *distance education and teacher education*. He illustrates the possibilities of research in distance education in terms of topics like- world perspective of distance education; national perspective of distance education; open universities; systems ignored, higher education, research and national policy on education, distance education and national policy on education; research in distance education; and so on.

Third research attempt by IGNOU-UNESCO Chair

Collaboration : Following the collaborative approach, the IGNOU-UNESCO Chair has identified nine areas of research. About one hundred collaborators from India participated in this exercise. Diverse areas of research were identified. The area-wise distribution of projects preferred by the collaborators indicated the current priority and feasibility. The collaborators gave a high priority to studies in areas, such as, need assessment, structural assessment, and programming.

Area-wise Distribution of Projects

Table 3:

Areas of Projects	Data of 91 projects given in %
1.0 Need Assessment	19.78
2.0 Studies: Structures and Components	
2.1 System	18.68
2.2 Components (Materials)	
3.0 Preparing Plans	
3.1 Preparing National/State/Local Plans	05.49
3.2 Capacity Building	
4.0 Process Studies	
4.1 Open Learning Pedagogy	
4.2 Pedagogy of ITV	16.48
4.3 Evolving Paradigm from Print Material to Multi-Media	
5.0 Media and Interactivity	
5.1 Media	10.98
5.2 Interactivity: Teleconferencing	
6.0 Programming	
6.1 Integrating Programs: Modes, Levels, Sites	17.58
6.2 New Vision of Programming: Innovations	
7.0 Collaboration and Networking	
7.1 Physical Networking	4.40
7.2 SIG (Virtual)	
8.0 Research	
8.1 Areas and Process	4.40
8.2 Researchers	
9.0 Financing	2.20
Grand Total of 91 Studies	100.00

Fourth research attempt by Seshratnam, C.

Seshratnam⁶ (1996), has given some of the broad areas on which research needs to be promoted intensively :

- politico-socio-economic factors leading to the establishment of distance education institutions.
- aims and object-their fulfillment.
- organizational structure-reasons for adopting a particular model.
- role of regional and study centers.

- course development, approaches-models, significance and problems in course teams.
- identification of educational needs, methods and mechanisms.
- nature and types of courses, feedback from students, tutors and counselors.
- characteristics of students.
- problems of dropout and persistence.
- multi-media instructional system-nature and components.
- role of communication and information technology.
- offering science and technology courses: problems in providing lab facilities, practical work.
- student support services: why ? What ? How ?
- face to face tuition and correspondence tuition.
- assessment procedures and methods.
- evaluation of the system: organization, methods, procedures, results, modification of the system on the results of evaluation.
- impacts on and gains of the states.

Fifth research attempt by Hyderabad group and UNESCO Chair

Dr. B. R. Ambedkar Open University of Hyderabad and UNESCO Chair organized a three-day workshop in 1998, where a group of about thirty-five faculty members participated. They proposed to conduct research in the areas of needs and problems of distance learners, training needs of distance educators, opportunities and development of potentialities of women learners, administrative problems at student centers, quality improvement of correspondence institutes, student council, evaluating students support services, self-help groups, utilization of audio-visual aids, criteria for evaluating learning materials, developing bridge courses, studying examination systems, and so on.

Sixth research attempt by Nashik group

Joshi, et. al. (1999) have given the following stages of a distance teacher education program and the related research areas of each stage.

Table 4 : Stages-wise Tasks of Distance Teacher Education Programme

Stage	Sub-stage
a) Planning stage	<ul style="list-style-type: none"> ○ needs analyses for programme plans. ○ profiles of students. ○ social perceptions of distance education. ○ issues of languages of instruction. ○ programme planning process. ○ communication patterns. ○ program identification.
b) Development stage	<ul style="list-style-type: none"> ○ quality control. ○ causes of delay. ○ costing of courses. ○ profiles of persons associated. ○ suggestions of persons associated . ○ course development models. ○ the role of electronic publishing. ○ formative testing of materials. ○ factors determining the nature of the instructional package integrating various components. ○ vetting of manuscripts. ○ patterns of interaction between/amongst course writers, instructional designers, content experts and a/v producers.
c) Production stage : <ul style="list-style-type: none"> ○ Print ○ A/V 	<ul style="list-style-type: none"> ○ list of activities, difficulties at the pre-printing stage. ○ the role of electronic publishing at the pre-printing stage. ○ expectations of print production staff in a manuscript. ○ time taken for a manuscript to be converted to the pre-printing stage. ○ patterns of interaction between academics and producers. ○ time taken for a production script to be converted into a programme. ○ proportion of shooting time to final programme time.

<p>d) Delivery Stage</p>	<ul style="list-style-type: none"> ○ difficulties of students in obtaining materials. ○ students expectations from study centers. ○ difficulties of study center personnel. ○ characteristics of successful and unsuccessful study centers. ○ difficulties of students and study centers with regard to the practical and applied courses. ○ students and study centers' difficulties regarding tests and examinations.
<p>e) Evaluation of products :</p> <ul style="list-style-type: none"> ○ Programs ○ Print Materials ○ A/V Materials 	<ul style="list-style-type: none"> ○ social acceptability of programmes. ○ student perceptions about programmes. ○ employment potential of programmes. ○ total costs of programmes. ○ teachability of books. ○ effectiveness of pedagogical/instructional formats. ○ social/academic acceptance of books. ○ total cost of books. ○ comparison of open university and conventional university books. ○ teachability of materials. ○ use of the a/v materials. ○ the length of a/v programs. ○ opinions about the a/v materials students. ○ teachers/counselors, senior subject experts, opinion leaders, etc.

Seventh research attempt by UNESCO Chair

Issue-analysis : The Chair undertook an exercise of identifying issues and sub-issues of research in distance education (research on research process). On the basis of common sense, we identified the stages of the research-process. We also undertook an analysis of the dimensions of research conditions. An overview of these issues will provide an understanding of new areas of research in distance education, help in identification of researchers, research laboratories, supporting research personnel and in

dissemination of research outcomes. The table below provides a summary overview of this analysis.

Table 5 : Issues of Research Process and Research Dimensions

Issues	Sub-issues
i. Why research ?	<ul style="list-style-type: none"> ○ improving quality of our current services. ○ utility of research for new developments. ○ formative research, process research and product research reduces costs and brings efficiency into the systems. ○ improves self-esteem of professionals.
ii. Who will do research?	<ul style="list-style-type: none"> ○ all the suited persons/teams capable and willing to undertake research. ○ faculty members of open universities/ institutes. ○ student-researchers. ○ grouping researchers, into teams consisting of teachers, researchers, extension workers, professionals, and field activists. ○ accessing virtual research groups.
iii. Inter-disciplinary approach and teams.	<ul style="list-style-type: none"> ○ convergence of researches in disciplinary, systemic and subject pedagogue areas. ○ structural and functional relationship amongst research groups. ○ integration of process and outcomes of research within/amongst different units. ○ policy formulation for inter disciplinary research.
iv. Needed orientation of personnel connected with the system.	<ul style="list-style-type: none"> ○ orientation to all types and levels of personnel engaged in conducting research. ○ appreciation and orientation programs for supporting staff for enriching research. ○ organizing preparatory programs for specifying areas, objectives, scope, and methodology of programs.
v. Supporting system of research.	<ul style="list-style-type: none"> ○ facilitating research processes by appropriate distribution of research budgets. ○ generation of resources from outside funding agencies.

	<ul style="list-style-type: none"> ○ incentives for internal and external researchers. ○ reaction of funding agencies and political masters for research. ○ persuasion to funding agencies for the cause of research.
vi. Research laboratories.	<ul style="list-style-type: none"> ○ establishment of research laboratories. ○ providing infrastructures. ○ use conventional research labs of universities. ○ use research labs of any place, any organization including private groups.
vii. Research guides and other personnel.	<ul style="list-style-type: none"> ○ identification of research guides and principal investigators. ○ other research personnel.
viii. Research dissemination.	<ul style="list-style-type: none"> ○ disseminating findings with users of research. ○ use research findings for improving old programs and launching new programs. ○ use high-tech and local, indigenous systems for communication. ○ avoiding duplication.
ix. Different approaches to research process.	<ul style="list-style-type: none"> ○ pluralistic methodologies of research. ○ enhancing disciplinary research area research and systemic research. ○ development of inter-institutional mobility of researchers. ○ place of positivism and post-positivism paradigms.

Each of the issues stated above can lead to a series of research questions. In order to deal with these research questions, we need to provide introductory materials for the use of researchers and other related personnel. In collaboration with DEC, IGNOU, and experts from connected fields, we will develop such materials and organize teleconferences on topics like 'research in distance education'.

Eighth research attempt by Calvert

Conduct organized research : Some other friends have remarked that distance education researches in India are sporadic. Such studies have resulted into uncoordinated outcomes. They say that the researchers are selecting problems with limited

perspectives. Many researchers pick up topics without considering the utility in a wholistic manner. Hence, research in distance education could not effectively relate itself to the formulation of the theory - building and coordinated practices. It is, therefore, essential to coordinate and prioritize areas of research in distance education. How do we go about ?

In order to have a comprehensive conceptual framework for distance education, we found that Calvert (1986)⁷ has provided a systematic framework. This framework covers the stages of input, process, and output of research. The sub-categorization of areas of research-within-stages is useful. Six areas of research are given as “students-input-variables, system-input-variables, development-process-variables, delivery-process-variables, student-outcome-variables, and system-outcome-variables”.

Table 6 : Giving Conceptual Framework for Distance Education Research

Inputs Variables	Process Variables	Outcome Variables
STUDENT- Educational background, perceived needs, motivation, learning style, study environment.	DEVELOPMENT- Curriculum, development model, design of instruction, media, course work load, pacing, production procedures.	STUDENT- Enrolment, academic progress, academic performance, use of materials and services, dropouts.
SYSTEM- National requirements, institutional policy, financial resources, technological resources, human resources, geography	DELIVERY- Recruitment methods, academic support, formal feedback	SYSTEM- Development, efficiency, cost effectiveness, acceptance in the system

Ninth research attempt by IGNOU-UNESCO Chair scanned the literature

Earlier, we have discussed that UNESCO Chair has identified various areas of research. In this caption UNESCO Chair attempted to analyze the current research literature, interviewed research personnel, and identified the issues involved. Considering the current trends in the research processes of distance education, UNESCO Chair has raised the following points. These points pertain to the purposes and situations for which distance education is best suited, as distance education is being increasingly perceived as an effective method of instruction such as :

- o Is technology-assisted, distant teaching as effective as traditional face-to-face teaching ?
- o What factors determine the most effective mix of technology in a given distant teaching situation ?
- o What are the characteristics of effective distant students and teachers ? How important is teacher-student and student-student interaction in the distance education process and in what form(s) can this interaction most effectively take place ?
- o What cost factors should be considered when planning or implementing distance education programs and how are those costs become benefits to the learner ?
- o Research efforts of : (a) lesser relevance, (b) inferior quality, and (c) smaller magnitude than the critical mass, do not have any impact upon the system. What is meant by critical mass of research in terms of studies, funds, persons, time, efforts, and, and so on ? There is new field of meta-research. How do we manage over research areas, methodologies, persons, schools of studies, utilizing the findings and so on ? How do we go about ?

We have reviewed literature, used the available findings, and arrived at conclusions. There is evidence of major shifts in distance education system. There is an effort tilting in favour of reaching out to larger numbers without losing the essentials of the old traditional model. Aspects of : (i) pedagogy such as- instructional format, instructional medium, instructional design, (ii) interactivity, (iii) delivery, (iv) learners' demands, (v) economics of the system, and (vi) policy matters, which will enable the system to be effective and relevant across institutional/national boundaries, have to be looked into.

Paradigm : Changes in Education

Distance vs. Traditional Education : Research⁸ indicates that the instructional format itself (e.g., interactive video vs. videotape vs. "live" instructor) has little effect on student' achievement as long as the delivery technology is appropriate to the content being offered and all participants have access to the same technology. Other conclusions drawn from this line of research suggest :

- o achievement (tends to be higher for distant as opposed to traditional students) according to various tests administered by course instructors (Sounder⁹ 1993), no significant difference has appeared in positive attitudes towards the distance and traditional education course material.
- o conventional instruction is perceived to be better organized and more clearly presented than distance education.

- o character of organization and reflection needed to teach effectively at a distance often improves an instructor's traditional teaching.
- o future research should focus on the critical factor in determining student achievement and the design of instruction itself.

Reasons for students' success : Research suggests that distant students bring basic characteristics to their learning experience that influences the successful completion of their course. Distance education students : (a) are voluntarily seeking further education, (b) have post-secondary education goals with expectations for higher grades, (c) are highly motivated and self-disciplined, and (d) are older in age.

Studies also concluded that similar factors determine successful learning whether the students are distant or traditional. These factors include : (a) willingness to initiate call to instructors for assistance, (b) possessing a more serious attitude towards the courses, (c) employment in an area where career advances can be readily "achieved" through academic upgrading in a distance education environment, and (d) previous completion of a college degree.

Successful instruction : Good distance teaching practices are fundamentally identical to good traditional teaching practices and those that influence good instruction may be generally universal across different environments and populations. Because distance education and its technologies require extensive planning and preparation, distance educators must consider the following in order to improve their effectiveness :

- o *extensive pre-planning and formative evaluation* is necessary. Teachers cannot "wing it". Distance learners like instructors are well prepared and organized.
- o *learners* benefit significantly from a well-designed syllabus and presentation outlines. Structured note taking, using tools such as interactive study guides, and the use of visuals and graphics as part of the syllabus and presentation outlines contribute to student understanding of the course. However, these visuals must be tailored to the characteristics of the medium and to the characteristics of the students.
- o *teachers* must be trained properly both in the use of equipment and in those techniques proven effective in the distance education environment. Learners get more from the courses when the instructor seems comfortable with the technology, maintains eye contact with the camera, repeats questions, and possesses a sense of humor.

Importance of interaction : Many distant learners require support and guidance to optimize their distance learning experiences. This support typically takes the form of

some combination of student-instructor and student-student interaction. Research findings on the need for interaction have produced some important guidelines for instructors engaged in organizing courses for distant students :

- Learners need timely feedback regarding course assignments, exams, and projects.
- Learners benefit significantly from their involvement in small learning groups. Learning groups provide support and encouragement along with extra feedback on course assignments. Most importantly, the groups foster the feeling that if help is needed it is readily available.
- Learners are more motivated if they are in frequent contact with the instructor. More structured contact might be utilized as a motivational tool.
- Utilization of on-site facilitators who develop a personal rapport with students and who are familiar with equipment and other course materials increases student satisfaction with courses.
- The use of technologies such as fax machines, computers, and telephones can also enhance the learner support and interaction opportunities.

Cost versus benefits : When establishing a distance education programme, one of the most important things considered is the cost of the system. Several cost component factors come into the design of a distance education system :

- Technology hardware e.g., videotape players, cameras, and software e.g., computer programs.
- Transmission-the on-going expense of leasing transmission access.
- Maintenance-repairing and updating equipment.
- Infrastructure-the foundational network located at the originating and receiving campuses.
- Production-technological and personnel support.
- Support-miscellaneous expenses needed to ensure the system works successfully including administrative costs, registration, advising/counseling local support costs, facilities and overhead costs.

Tenth research attempt by resource internet report

We were reading a summary from the Internet on ICT and education. It is source of research areas and research problems related to Internet as a medium of distance education. The Internet message of a member reads as :

A member from the Philippines posted a short essay on "Why the Internet is a poor learning environment". Although there are hundreds of thousands of educational and learning sites, there are probably even more sites with attractions, distractions and temptations for students. These sites are in fact easier to find than the educational ones. "Used carefully, the Internet can be helpful for doing a number of things, I'd acknowledge. But it is definitely a very poor environment for education and learning because it destroys the carefully designed school learning process. Effective education and learning needs a controlled environment, one that is designed by instructors, professors and education experts for maximum transfer of knowledge", according to the member. "Education also means learning to work with high-level symbols. It means going beyond the level that is directly appreciated by our five senses, the sensory level, and thinking in more abstract terms. The Internet, however, is moving in the opposite direction. Increasingly advertising-driven, it is moving away from abstract symbols, towards the purely sensory level, the level that demands the least from its users."

He concludes the article with a number of suggestions to the Philippine Government:— Expand school and public libraries;— implement a continuing skills-upgrading programme for teachers; — use the government-owned TV Channel, which is freely accessible to anybody with a TV set within its range, primarily for educational purposes; —acquire all kinds of documentary videos through compulsory licensing, including the Discovery Channel Series, and air them on TV Channel--form an experimental educational Internet among schools which already have necessary networking facilities.

A member from the United States disagreed : "His metaphor of a university polluted by infotainment and tawdry commercial enterprises might resonate with some, but I would equate the Internet with Manila. It's a vibrant and noisy city, a mix of all kinds of organizations, people, and distractions, but certainly learning goes on there, and in other capitals around the world." This member pointed out that with the current development of Internet II separate high bandwidth applications for higher education institutions might become a possibility. The answer to the question of whether the Internet should be the top priority for a nation with limited resources, depends on what kind of national conversation takes place to set priorities.

Such issues related to Internet have to be analyzed for research in Internet. The Fiend from Philippine claims that Internet medium is powerful but is underused. Why is it so ? It becomes serious research question. We may look into the Internet-pedagogy,

and habits of users of this medium. We may research into the parallelism between the habits of mind [both conscious and unconscious] and the features of Internet medium. Research should help us to conceptualize the policy implications and programming of Internet for open/distance education.

Emerging Paradigm Shifts

Philosophical framework of distance education : Within the framework of distance education, we must specify four sets of philosophical assumptions related to : (a) the nature of students, (b) nature of subjects, (c) scope of interaction or learning environment, and (d) nature of desired outcomes. Regarding the nature of distance education learners, we have to decide whether learners are active or passive participants. Regarding nature of subject, one would have to consider whether the subject is factual or integrated body of knowledge. Regarding the nature of learning interactions, we have to decide whether the environment is predominantly cognitive or affective. Regarding evaluation we have to accept the position whether the evaluation is going to be convergent or divergent. What belief systems are operating in the theoretical and operational frameworks of distance education ?

What is paradigm : Research should find answers to above philosophical positions so as to conceptualize the meaning of paradigms of the new science of distance education. Kuhn (1962)¹⁰, in his influential work “The Structure of Scientific Revolutions” has distinguished between ‘normal science’ which solves puzzles while operating within a particular paradigm, and ‘revolutionary science’, which occurs rarely and requires that one paradigm be abandoned for another. This insight was derived, in part, from his analysis of the Copernican revolution. For the later, he used the term paradigm shifts. We feel that, at different points of time, such paradigm shifts are taking place in society, education and research. We are looking for their implications for distance education. Before implications, we must ascertain the occurrence of paradigm shifts in these three areas-society, education, and research.

Paradigm : Shifts in Society

Over the years we feel that societies are getting transformed from hunting to agricultural to changes in coming due to many factors. Identification of such factors is not our agenda today. We brainstormed and identified the following scenario of shifting trends.

Societal Paradigm Shifts of Mission and Means

- i. *Changing missions*– Conversion of traditional society to modern society by planned transformation from agricultural-industrial society to information society.:

- ii. *Political trends*— Colonized globe to sovereign countries, education is recognized as an instrument of social change, promise of 6% GNP in India, education declared as a fundamental right, emergence of national policy of education, decentralized management of local education; liberalization-privatization of economy having component of safety net; increasing access to education, accepting the principles of equity, quality and participation of the people; economic development is demanding training of work force; improving cost effectiveness of education; and accountability of education system.
- iii. *Economic development and labour market trend*— knowledge-based economy; demand for better teacher-workforce; life-long learning; education and training as a major market sector; preference to on-job training and development; and improved cost effectiveness of education systems.
- iv. *Social trends*—families are being restructure, changing contents and style of entertainment and leisure; community life, and alternative activities for citizenship; health clubs and resorts; changing life styles, home-working; women entering work force; social unrest and upsurge of violence; and unemployment and need for job deployment.
- v. *Technology impact*—increasing power of machines; decreasing power-cost ratio; convergence of telecommunication; fast track developments in homes and at work; developing public network.

B) Paradigm : Changes in Education

Two technologies [computers and satellite] have brought many changes in distance education. Easy availability of multimedia and penetrating inroads of Internet has changed the idea of reach and quality of interactions. Educational practices are getting transformed.

Educational paradigm shifts :

- *Phenomenon of merging of computer and media technologies and its impact*—greater learner autonomy leading to administrative chaos, breaking established institutions and administration leading to virtual university; breaking up of controls in technologically advanced countries over socio-economic aspects of poorer countries and persons.
- *Satellite delivery resulting in homogenization and globalization* i.e. continuation of group-based institutions; greater stability and authority with the teaching-end; reinforcing of traditional forces; and perpetuating control of exploiting countries over poor technology countries.

- *As a result of these two changes of technology, the education system makes adjustments in the form of opening of more institutions; developing new skills and competencies; creating regional learning networks; and improving the financing aspects of distance education.*

C) Paradigm : Shifts in Distance Education Research

Importance of research : In one of the brainstorming session, some one asked a question-why should we undertake research in distance education ? Someone else responded that research helps creating a body of knowledge for creating new guidelines. Research also acts as a tool for improving the process of faculty development. Research creates self-esteem amongst faculty members. It can improve quality of our programmes in terms of materials, delivery, support services, and evaluation and others. Research also invigorates intellectual climate of institutions. It can help subject substance and helps to decipher and design subject-androgogy. Research helps in setting new agenda.

Changing scenario of distance education research

- o *Changing players-* Research is undertaken by diverse players-laboratories, R&D groups, universities, institutions of higher learning, professional individuals, and many others.
- o *New Scenario of research—* Research agenda and mechanisms are changing everyday. Areas of research, assumptions of research, and uses of research findings are transforming our perspectives.
- o *Changing driving force—*Funding agencies are chasing academic institutions, and even developmental agencies for their research missions.
- o *Methodology—* Process of research has undergone changes from the point of view of post-positivism.
- o Research is becoming power-tool in the hands of informed groups. The powerful nations and the richer classes are supporting research with distinction. Who is funding ? Why is the group funding ? What are the explicit and implicit goals ?
- o *Emerging caution—* Open universities should associate with groups who should start doing research in poverty, illiteracy, under-nourishment, means of exploitation, oppression of disadvantaged groups, and knowledge-have-nots.

Challenges Ahead

Challenges : Research in the realm of distance education is confronting challenges like : (a) overcoming sporadic research efforts; (b) encountering difficulties in conceptualizing alternate programming; (c) removing attitudinal obstacles by undertaking *systemic*-research and *disciplinary*-research; (d) augmenting financial resources; (e) coordinating research teams predominantly drawn from conventional system; and (f) *undertaking pedagogical* research considering uniqueness of cultures and locale specific conditions.

Instituting research in universities

Research perspective : After the establishment of open universities, the faculty focussed their attention on the development of curricular programs and courses. The emphasis on research came in much later. The research policy advocates research development in area-based studies, discipline-based studies, developmental studies, interdisciplinary studies and systemic studies.

Instituting research in open universities : In order to implement the research strategy, some of the universities like IGNOU have launched research schemes, and other supportive activities. These are : (i) research degree programmes leading to the award of M.A./M.Phil./Ph.D., (ii) research projects scheme for the university staff and academicians from allied institutions, (iii) research fellowships and associateships, (iv) publication of journals like Indian Journal of Open Learning, (v) establishing chairs like IGNOU-UNESCO Chair and (vi) launching various other research projects.

UNESCO Chair-vision and mission

Vision : In order to formulate the vision, the IGNOU-UNESCO Chair follows the Japanese approach. Averaging, minimum common agreements, compromising, majority opinions, and arriving at a predetermined consensus are the traditional ways of vision making. We do not follow either/or approach; rather, we design a third view or called a higher view as termed by de Bono. Vision making is a continuing affair. The Chair involves all the stakeholders, design the vision without compromise. We mesh personal vision with organizational vision, and then develop concrete-observable programs.

While undertaking such exercises, the following points-dimensions and principles-are kept in view. A six-fold strategy was considered for finding guiding points for research for UNESCO Chair. The six dimensions are :

- o *focus-exploratory/descriptive/developmental approaches.*
- o *research participation-independent/collaborative participation.*
- o *content axis-cognitive, affective, and psychomotor domains.*
- o *method axis-empirical/rational/ethnographical methodology.*
- o *perspectives-pedagogy/andragogy.*
- o *application-implementing findings of 'content-research', and/or 'method-research'.*

Some of the principles for undertaking research studies may be considered for inclusion, into the strategy :

- i. **Take care of pre-requisites.** The IGNOU-UNESCO Chair proposes to lead the way in R&D by listing the pre-requisite programs. This could include programs like, need assessment, and envisioning staff training programs.
- ii. **Involve philosophers and stakeholders for vision making.** *The two sets of persons, namely, philosophers and stakeholders would provide complementary perspective on theoretical and practical issues.*
- iii. **Take of plurality through research.** Over the years education has tilted itself towards the management of uniformity of structures, common curriculum, uniformity of programs, standardized evaluation systems, and so on. This trend has to be counter balanced by nurturing plurality and local relevance. Quality and plurality are not contradictory. Let us learn to manage diversity.
- iv. **Take care of gamma research.** If distance education has to help the development of human being and liberate the entrapped energy, we have to search for uniqueness. Research strategies covering Alpha research 'looking for generalities' amongst all, Beta research 'looking for specificity' of some and *Gamma* research 'looking for uniqueness' of only one, have to be balanced. Through research, we have to discover the artful balance of pedagogical requirements of uniqueness.
- v. **Research methodologies.** Alternative research methodologies should be explored and even designed. The scientific-quantitative, descriptive-nomothetic, qualitative-ideographic approach and so on should be exploited.
- vi. **Differentiate between two products.** *outputs and outcomes.* A simple system, say distance education, is viewed in terms of inputs, process, and product.

Related to the 'product', there are two types of indices: research outputs [units produced by the system], and research *outcomes* [units used by the market forces]. We should understand that the objectives of these two types of indices of a system of research in distance education are different.

- vii. **Accept multiple and diverse outputs.** We should accept the utility of the diversity of research products. These products could be made available in the form of "concept papers about the system of distance education; finding new ways of preparing personnel for the system of distance education; formulating coordinated policy-programs; creation of educational legislation; quality management through process-affiliations covering countries beyond-boundaries; coordinating formulation of consortium of distance education; networking of databases; joint-launching of programs; networking of resources, institutions, and personnel; instituting innovations and sharing experiences; organizing common publications; conducting interdisciplinary seminars, lectures & visitations and so on". Whatever the form we must document the products of our research work for accountability, validation, and utilization.

To conclude, we wish record that the Chair has formulated area-concepts, method concepts, undertaken envisioning exercises, identified areas of concern, conducted exploratory studies, organized activities for preparing the researchers, and listed pre-requisites for strengthening staff training. Special efforts for documentation of the findings of collaborative research studies have been made for wider circulation.

The Chair believes that our common *vision* must provide guidelines for undertaking *developmental* research through participatory approaches. Second, our research should cover complete *content* axis covering all the three domains-cognitive, affective, and psychomotor. Thirdly, research should go beyond subject contents and should cover areas like pedagogy of distance education, and management of distance education. Fourthly, the research should have the scope for the *application of findings*.

References

- Panda S.K. et al (1996) : Open and Distance Education Research-Analysis and Annotation, Kakatiya, Indian Distance Association, Warangal.
- Kaul Lokesh (1997) : Open and Distance Education, "A Trend report in fifth survey of Indian Educational Research (1988-92, Vol. 1), NCERT, New Delhi.

- Dash N.K. (1998) : "Research Possibilities in Distance Education., in Mukhopadya, M.Ed, "Optimising Human Learning". Amar Parkashan, 1998.
- . Sesharatnam, C (1996) : "Research on Distance Education in Andhra Pradesh." in service candidate, Hyderabad.
- Calvert (1986) : Quoted by Dash N.K. Mukhopndhyay, Amar Publication, 1993, N. Delhi.
- Kuhun : Diverse Structure of Revoluting, Ohoio, U.S.A., 1962,