Chapter 1 Introduction

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Enhancing Learning through Information and Communication Technology (ICT) in Higher Education: An Evaluative study of UGC Efforts

"You cannot step twice into the same river, for fresh waters are ever flowing in upon you".

Heraclitus

This research sets out to explore the following questions:

What are we learning about technological innovation in education, and that in this regard the efforts of UGC to promote ICT in Education?

Keywords: Learning, technology innovation, knowledge creation, knowledge management, organizational learning, instructional design,

In today's business environment there is no executive task more vital and demanding than that of sustained management of innovation and change...to compete in this ever changing environment, companies must create new products, services and processes; to dominate they must adopt innovation as a way of life.

Tushman and Nadler (1986:74)

Quality in a service or product is not what you put into it. It is what the client or customer gets out of it.

Drucker (cited in Crego and Schiffrin, 1995:42)

1.1 OVERVIEW

This thesis investigates process, product and service innovation at a higher education institution. Technology innovation is an established field of research, but innovation in higher education (educational innovation) is an unexplored research area till now. The field of technology innovation is not adequate to describe and investigate all aspects of educational innovation. Therefore both learning and management theories are drawn upon to better understand the ICT as an educational innovation. An interdisciplinary framework is developed by exploring knowledge, learning and design theory, organizational learning, knowledge creation, knowledge management, change management, technology innovation and customer relationship management, and using it to identify critical success factors involved in educational innovation.
The emergence of Information and Communication technology (ICT) has ushered in a new era. It has influenced every sector of the society, that is trade, Industry, Science, Technology etc. including Education. ICT includes devices for encoding, storing, organizing, processing, retrieving, transferring and presenting information with the help of telecommunication, television and computers. The emergence of ICT is not only affecting teaching style but also influencing the learning style, whereby a student becomes the explore of information and independent knowledge worker. The ICT has immense power to enhance personalized learning.

The landmark policy on Computer Based Education and use of Information and Communication Technology was laid by the National Task Force on Information Technology and Software Development (IT Task Force) - constituted by the Prime Minister - in July, 1998. Recognizing Information Technology to be a frontier area of knowledge and also a critical tool for assimilating, processing and productising all other spheres of knowledge, the IT Task Force recommended that the Government should launch an 'Operational Knowledge' campaign to universalise computer literacy and also to spread the use of computers and Information Technology (IT) in education. It made four major recommendations on IT Education - which were accepted by the Government, these are here as under mentioned:

The Government shall soon launch three schemes - Vidyarathi Computer

1. Scheme, Shikshak Computer Scheme and School Computer Scheme to enable students, teachers and schools respectively, desirous of buying computers to do so under attractive packages.

2. Computers and Internet shall be made accessible to schools, polytechnics, colleges and Public hospitals in the country by the year 2003.

3. The concept of SMART schools where the emphasis is not only on information Technology in Schools, but also on the use of skill and values that will be important in the next millennium shall be started on a pilot demonstrative basis in each State.

4. Pilot project shall be launched in some lead districts, which have already attained universal literacy with the aim of achieving universal literacy in all the Secondary schools in these districts. These pilot projects will be the joint Initiatives of the local educational institutions, respective State Governments and Centre.

In this regard NCERT has come out recently with a school curriculum framework wherein it has been emphasized to integrate ICT in school education. Integration of ICT in school education is not possible without the teachers being competent in techno-pedagogic dimension of ICT. This objective has to be largely realized through various teachers education programmes. The NCTE – an apex body in the area of Indian Teacher Education is also stressing upon integration of ICT in Teacher education all over the country. It is because ICT has tremendous potential for education, ICT can enable teacher to reach out widely, efficiently and effectively. Recently, the NCTE has made Information and Communication Technology (ICT)
• Policy and programs of UGC for developing ICT in higher education

1.4 Statement of Problem

We live in a rapidly changing world. Within a relatively short time of span, we have moved from the “industrial age” to the “information age” in the coming years, our way of life and our expectations are likely to tremendously affected by new technologies. The knowledge we use today will be largely obsolete. So will many of the tools (Weiland, 1993 p.60). Therefore we have to realize the effective teaching methods of the past cannot ensure the future. Educational technologies can only help student’s grasp the impact that technology has on human life (Wright, 1994).

Innovation in higher education is an unexplored field. Increased understanding of innovation should, in turn, lead to competitiveness. There is, therefore, a need for a framework that can be used as a tool to guide new learning technologies in terms of higher education. Organizations are increasingly turning to innovative practices in order to retain competitiveness. This research will focus on a study of UGC efforts in attempting to contribute enhancing learning in higher education. It will also contribute to knowledge about educational innovation within a higher education context. The following main research questions guided the enquiry:

What are we learning about technological innovation in education, and that in this regard the efforts of UGC to promote ICT in Education?

This question can be divided in to following sub questions:

• How will technology and learning change the nature of higher education?
• What are and that what will be the implications on education coursework and programs on curriculum development and implementation?
• How has and how will UGC promote and implement ICT in higher education?
• What are and that what will be the implementation problems of ICT in education?
• What are the benefits and the concerns raised by the uses of Information and Communication Technology in Higher education?

1.5 Hypothesis

The following concepts are addressed to clarify the researcher’s assumptions, namely:

• The view in this study of educational innovation
• The domain of literature resources
• An overview of the research perspectives
• The view of technology

1.5.1 View of educational Innovation

Educational innovation in this study not only uses the field of technology innovation as its base, but also looks the learning theories to inform the broader field of educational innovation.
literacy a compulsory component of the secondary pre-service teacher. With the implementation of this decision students of B. Ed., B.P.Ed., M.Ed., M.P.Ed and M.A. (Education) will acquire ICT literacy and experience of preparing lesson plans in multimedia, accessing off-line and on-line resources, document creation and of communication using e-mail etc. For all this happen, it will be essential that teacher educator himself/herself is ICT literate and feels confident in using ICT in teacher education.

To develop IT orientation in higher education in Tenth Plan, efforts will be made to provide Intranet and Internet connectivity to universities and colleges. Each university will be encouraged to establish linear area network so as to create connectivity on the campus. The University would also be helped to establish college network for connecting all the colleges the jurisdiction of the university. This network for free flow of knowledge and information, would enhance the access as well as quality of higher education.

### 1.2 Objectives of Research

The purpose of this research has been to investigate the degree to which Information and Communication Technology (ICT) can be effective mechanism for information delivery and professional support for teachers. It also investigated that extent to which the Internet can be a vehicle for meeting the information needs of teachers. The main points of objectives have been as follows:

1. To study about learning and its epistemology.
2. To study and discuss the concept of ICT along with its various dimensions.
3. To study and investigate about the emergence of ICT in higher education
4. To study about the international status of use of ICT in higher education
5. To study the socio-psychological and Techno-pedagogic dimension of ICT in education.
6. To find out the areas of higher education where ICT is being implemented.
7. To study and discuss about the role of ICT in Educational Management of higher educational institutions.
8. To study and evaluate the role of UGC in promoting ICT in the sphere of higher Education.
9. To study the problems regarding implementation of ICT in the field of higher education and to suggest the ways and measure to remove them.
10. To find out problems of ICT Implementation.

### 1.3 Importance of the Study

This study will contribute to our understanding of the following aspects:

- Technological innovation in higher education
- Learning and its epistemology
- Application of ICT in higher education
- Different dimensions of ICT in education
1.5.2 Domain of literature Resources
An extensive body of literature and practices is consulted in this study. Nevertheless, the limitation of this study does not make provision for a complete literature survey. In the sense that important and relevant theories and practices could have been omitted.

1.5.3 Research Perspectives of the study
Research generated in this study does not pretend to be absolute. This pertains to findings of the analysis of the case. It should rather be viewed as contribution to the field of educational innovation.

1.5.4 Technology in this study
Technology in this study is very prominent because application of ICT in education of this study is the example of technological innovation.

1.6 Methodology/Plan
Research Methodology explained in terms of the following components:
- Approach
- Design
- Data Collection, instruments and methods

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<thead>
<tr>
<th>Approach</th>
<th>Qualitative</th>
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<tr>
<td>Design</td>
<td>Descriptive and Interpretive evaluated study</td>
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<tr>
<td>Data Collection</td>
<td>Literature Review (Technical Literature), non Technical literature</td>
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<td>Institutional reports and statistics</td>
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<td>Sample of web supported programs and literature</td>
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Table 1.1 Methodology/Plan

1.6.1 Research approach
As mentioned in Section 1.1, the research approach of this study is qualitative.
The characteristics of qualitative research (Bogdan & Biklen, 1992:29-33) are as follows:
- Qualitative research is descriptive.
- Qualitative researchers are concerned with process rather than simply with outcomes and products.
- Qualitative researchers tend to analyse their data inductively.

"Meaning" is of essential concern to the qualitative approach.
Qualitative research has the natural setting as the direct source of data and the researcher is the key instrument.
Merriam (1998:6-8, 202) adds the following characteristics of qualitative research:
Qualitative research can reveal how all the parts work together to form a whole.
It assumes that reality is holistic, multidimensional, and ever-changing.

**1.6.2 Research design**

According to Mouton (1996:175) the research design serves to "plan, structure and execute" the research to maximize the "validity of the findings". The specific research design chosen for this study is that of a descriptive and interpretive evaluated study. An interpretive evaluated study can be categorized as qualitative research.

**1.6.2.1 Research design in this thesis**

The research design is a descriptive and interpretive case study that is analyzed through a combination of exploratory, qualitative methods and quantitative methods.

In a descriptive and interpretive case study, the researcher analyses, interprets and theories about the phenomenon against the backdrop of a theoretical framework. Although the research process in qualitative research is inductive, Merriam (1998:49) notes that most qualitative research inherently moulds or changes existing theory in that:

Data are analyzed and interpreted in light of the concepts of a particular theoretical orientation (Research question).

Findings are usually discussed in relation to existing knowledge (some of which is theory) with the aim of demonstrating how the present study has contributed to expanding the knowledge base (Research question).

Qualitative and quantitative data analyses are combined in an attempt to interpret the various innovations in this case.

Figure illustrates the research approach and design used in this study.

![Research approach and design diagram](image)

**Qualitative Research** approach is used in this research. A descriptive and interpretive evaluated study is used as the design of the research, with the UGC initiatives.
Research Design, according to Mouton (1996: 175) the research design serves to "Plan, structure and execute" the research to maximize the "validity of the findings". The specific research design chosen for this study is that of a descriptive and interpretive evaluated study.

Data collection methods to assume the research question include technical and non-technical literature, a sample of web-supported programs. The research questions below are addressed through the literature reviews, institutional reports, statistics, questionnaires, interviews and an overview of a sample of web-based courses

1.6.3 Sampling and selection

The UGC efforts for implementing ICT in Education was selected as the Evaluated study. In the study, purposeful sampling is used. Purposeful sampling takes place when the researcher selects a sample from which the most can be learned (Merriam, 1998:31).

1.6.3.1 Instruments

The sources of information or instruments are the following:

- Literature reviews (Technical data)
- Institutional reports and statistics (Non-technical data)
- Web-supported programmes (WebCT)
- Individual interviews
- Focus group interview

This research is particularly relevant to Indian higher education institutions. It is also useful for higher education institutions globally that are moving towards flexible, technology – enhanced product and services. Many residential institutions are moving towards becoming hybrid institutions with increasingly prominent traits of a virtual organization.