CHAPTER: 1
INTRODUCTION

Higher education has major three focus areas teaching, research and extension. It is the source in all walks of life and therefore supplies the much-needed human capital in management, planning, design, teaching and research. The growth of Higher Education system is highly dependent on scientific and technological advancement and economic growth of the country. It also provides opportunities for leaning at every phase of life, allowing people to upgrade their knowledge and skills from time to time based on the societal needs (NAAC, 2006). The report of the UNESCO International Commission on Education in the 21st Century titled "Learning: The Treasure Within" (popularly known as Delors Commission) emphasized four pillars of education: learning to know, learning to do, learning to live together and learning to be. While, higher education intends to imbibe all these four in individuals and the society, the report highlighted the following specific functions of higher education too:

- To prepare students for research and teaching;
- To provide highly specialized training courses adapted to the needs of economic and social life;
- To be open to all, so as to cater to the many aspects of lifelong education in the widest sense; and
- To promote international cooperation through internationalization of research, technology, networking, and free movement of persons and scientific ideas (UNESCO, 1996).

  After China and United States of America Indian Higher Education system is the third largest in the world. It has expanded at a fast pace by adding more number of higher education Institutions and very high number of students starving to attain the degree. The focus on the tertiary level of education lies on science and technology. The Distance Education Council looks after Distance learning and open education - a feature of the Indian higher education system. Indian higher education comprises of both public and private universities, university level institutions and colleges. Most types of educational institutions are financially supported by the Central and the State Governments.

1.1 Types of Higher Educational Institutions in India

There are varied types of universities and colleges in the higher educational system of India. Most vary in their academic, administrative and financial arrangements. The universities

established by the Act of Parliament are the central universities and the ones set up by the state legislatures are state universities. Central Government has granted some higher educational institutions as the deemed university status through gazette notifications.

Central Universities

Government of India fund and manage all the Central Universities in India. Across the country in all the central university the curriculum remains common.

State Universities

The state governments manage and fund the State Universities in the respective states. Thus, examination pattern and curriculum taught varies in every state.

Institutes of National Importance

Impeccable curriculum and academic standards has given private institution national importance, due to which they fall under this category. They are internationally recognized, highly reputable and most competitive.

Deemed to be Universities

Private colleges and education institutions known for their high quality education are deemed to be universities. The quality based education grants them full autonomy with respect to setting their curriculum and admissions requirements. Different Institutions have varied programs and requirements.

Colleges-Affiliated Colleges

Very high number of colleges in India are Affiliated Colleges. These affiliated collages follow their affiliated university's curriculum, examination structure, and grading protocol. The affiliated universities awards Transcripts and degrees to these colleges.

Autonomous Colleges

Autonomous colleges are overseen by universities, but works under a different protocol and can set their own curriculum and admission requirements. They award provisional certificates with the name of the college printed on the transcripts.

1.2 Emergence of New Types of Higher Education

Post 1980's there was emergence of lot of new types of higher education in India. Distance education gained wider prominence, privatisation of institutes increased and self-financed programmes started increasing.

The introduction of distance educational programmes has started a new epoch in the higher educational scenario. It is a supplementary method which meets the growing demand for higher education. In the last few decades, it has expanded a lot. Every year about 1.3 million students register for various courses in these universities. This is an economic and a quick way of increasing enrolment in higher education.

Table 1 Distance Educational Institutions

Sr.no	Year	No. of Institutions
1.	1981-82	22
2.	1990-91	40
3.	2000-01	74
4.	2007-08	144
5.	2011-12	197

Source: Twelfth Five year plan on higher education UGC-Report higher education in India at a glance 2012

1.3 Paradigm Shift from Teacher-centred Learning to Student Centred Learning

Higher Education plays lead role in contributing to economic development, social progress and political democracy in nation development. It also helps increase income and productivity that directly enrich human capital and society (Singh 2011). Higher quality of higher education ensures higher quality of human resource of the nation. With the time passing by, there has been a huge expansion of educational opportunities at all levels, particularly in higher education, and various committees and commissions on education have focused directly or indirectly the need for improvement and recognition of quality in Indian higher education system (NAAC, 2006). As per the available reports, two third of the Indian universities are providing sub-standard education while 90% colleges in India are below average**.** The time has come when the higher education institutions have become factories of degrees only and no or very concern gaining knowledge and wisdom. Students and teachers are running after attaining or providing degrees. Classroom system has been mechanical and facing a severe problem of

drastic drop in attendance. This concludes that Indian Higher Education still does not meet the global education quality standards (Nagoba, and Mantri, 2015). Students have concern to get higher grades and they study only for getting job. Students are hardworking but still lacking creativity and innovative outlook. (Singh 2011). There is an urgent requirement to enhance the quality of higher education system. For attaining this aim student-centered learning in classroom teaching by the teachers can be one of the initiative to achieve quality based higher education. From different pedagogical research, it has been concluded that teachers plays an important role in the classroom is undoubtedly the key educational determinant in student learning and achievement. To achieve the desired learning outcomes of the students, it is important to identify and promote the most effective practices. From this perspective, there is a general rejection (on the part of researchers, decision makers, teacher trainers, educational support staff, parents, classroom practitioners) of what is referred to as "traditional" teaching. This tradition form of teaching is basically teacher dominant, which relegates pupils to a passive role, reduces their classroom activity to the memorization of data to be recited to the teacher, and in particular, leads to the acquisition of skills of a lower taxonomic level (Gauthier and Dembele, 2004). Quality education is based on the students' performance and outcomes. Swami Vivekananda laid emphasis on self- teaching or self- learning. According to him, the child is regarded as the pivotal point of education and education must be based on the needs of the child. He is the storehouse of knowledge and this knowledge resides within the child. Until the inner teacher opens, all outside teaching is vain (Purkait, 1995). In the Education International project-Time for a New Paradigm in Education: Student Centred Learning, the definition of Student-Centred Learning (SCL) is given as- Student-Centred Learning represents both a mindset and a culture within a given higher education institution and is a learning approach which is broadly related to, and supported by, constructivist theories of learning. It is characterized by innovative methods of teaching which aim to promote learning in communication with teachers and other students and which take students seriously as active participants in their own learning, fostering transferable skills such as problem-solving, critical thinking and reflective thinking.

Student-Centred Learning comprised of the following elements (Education International, 2010):

- The reliance on active rather than passive learning;
- An emphasis on deep learning and understanding;
- Increased responsibility and accountability on the part of the student;

- An increased sense of autonomy in the student;

- An interdependence between teacher and student;

- Mutual respect within the student-teacher relationship; and

- A reflexive approach to the teaching and learning process on the part of both the teacher and the student.

The traditional approach to higher education institutions work in traditional way, most of the time students spent in classroom listening and watching to lectures of teachers. The students work individually on assignments, and cooperation is discouraged (Felder). The students working alone gets isolated and do not learn to communicate with others. Teacher-centred learning can get boring for students and they may lose concentration and even may miss important facts. In teacher-centred instruction, students do not have opportunity to express themselves, ask questions and direct their own learning (Concordia University, 2016). In student-centred learning, focus is equally on students and instructors. It give equal opportunity to teacher and students to interact. Group work encourages students to learn, to collaborate and to communicate with one another (Concordia University, 2016). This approach focuses on active learning, in which students learn to solve problems, answer questions, formulate questions of their own, discuss, explain, debate, or brainstorm during class; cooperative learning, and inductive teaching and learning (Felder). Some demerits of this approach are –as students are talking and interacting, classrooms are often busy, noisy and chaotic. It can be difficult on task for any teacher to look after all students' activities at same point of time, especially when the students are working on different stages of the same project. Due to the weakness of the teacher that he/ she doesn't deliver instruction to all students at once, some students may miss important facts. Few students prefer to work alone, so group work can become problematic (Concordia University, 2016).

In recent years, more teachers have moved toward a student-centred approach. However, some students maintain that teacher-centred education is the more effective strategy. To meet the needs of different students in most cases, it is best for teachers to use a combination of approaches. This can lead to adding the positives of different approaches benefit students. Instead of getting bored with teacher centred education or losing sight of their goals in a completely student-centred classroom, pupils can benefit from a well-balanced educational atmosphere (Concordia University, 2016) VI.

1.4 Benefits of Student Centred Learning

The benefits of Student Centred Learning includes providing skills for life of the students, creating independent students and responding to the changing and differing needs of individual students. Quality enhancement in Higher education can be achieved through Student Centered Learning. This approach provides overall advantage to the educational institutions, teachers, society and students.

It is seen several countries under colonial regime that are introduced education reforms and becoming developed nations. South Korea, Estonia, Finland are few exemplary states that encourage continuing education programs to develop knowledgebase so as to achieve economic development. Jain, Kaur & Babbar (2007) emphasizes that both education and knowledge are becoming important successful indicators for the nation development. In fact, the country which has more potential information is going to play leader role than other countries. The purpose of this study is to focus on education content that usher direction for India to become a developed country from a developing country tag. Exploitation of education is slowly emerging in India because of large population, poverty, illiteracy, which are some constraints. The traditional education system in India was able to serve only a small section of people who were rich and could afford to receive education. Yet, Kerala could achieve higher percentage of education or total literacy. The transformation from conventional methods of education to using of Information and Communication Technologies (ICTs) was a wake up phenomenon. Because ICTs were capable of providing instant and wider access to electronic content that is interest to the people. In the past, the information seekers physically commute to libraries, but the current ICTs are enabling the knowledge seekers, students to find the required information at their door step. A Desktop Personal Computer, Lap top or a Tab with internet connection is able to provide huge amount of global information. With the Internet, people not only accessing information but also communicating with each other. Subject experts are sharing their knowledge through intranet and internet using Web 2.0 technologies and social media. Students, teachers and domain specialists are forming into special interest groups and communicating with each other.

Intentional use of electronic media and Information and Communication Technologies (ICT) in teaching and learning process (Naidu, 2006) is referred to as e-learning, where "e" denotes "electronic". Individualized self-paced e-learning is commonly understood as situations where individual learners access learning resources like database or course content online

through Intranet/Internet. Individualized self-paced e-learning - offline is about a learner using learning resources like database/computer assisted learning packages.

E-learning (Markovi'c 2010) enables higher interactivity among professors and students and study material coverage in both undergraduate/graduate students. Further, professors and assistants ensure that students' critical thinking is developed, and to provide them freedom in discussion, topics choice, exchange of ideas and information, and expansion of knowledge.

With time, when technology grows, e-learning helps students to cope up in an easy manner. Over the years it has become a popular medium due to its flexibility and better innovativeness.

E-learning is commonly referred to the intentional use of networked information and communications technology in teaching and learning. It is also known widely as online learning, virtual learning, distributed learning, network and web-based learning. They all conceptualise the educational processes that utilise information and communications technology (ICT). However, these terms cannot be used synonymously with e-learning because it comprises more than these. The word "*e*" in "*e-learning*" stands for "*electronic*", e-learning would incorporate all educational activities that are carried out by individuals or groups working online or offline, and synchronously or asynchronously via networked or standalone computers and other electronic devices (Romiszowski, 2004).

The growth of e-learning is directly related to the increasing access to information and communications technology, as well it's decreasing cost. Positive growth in the area of internet and multimedia technologies are the change makers of E-learning. It is commonly thought that new technologies can make a big difference in education. Government of India under Ministry of HRD, has initiated various online course development programs viz., National Programme on Technology Education Learning (NPTEL) by offering free online video lectures in engineering, science and humanity courses. NPTEL is an open courseware initiative collaboratively started by seven Indian Institutes of Technology (IITs) and Indian Institute of Science (IISc). The purpose of online course development is to create an information rich society. Everyone in the society is empowered to create, receive, share and utilize information for their progress. High quality of designed, developed and validated online course can be a key ingredient to provide access to high quality meaningful digital content and serve as an effective virtual teacher. The arrival of the internet is responsible to create important developments in education. Nowadays, even the youngest of persons are able to effectively

use smart phones, internet, text messaging etc. This makes a moon walk for implementing an e-learning course. Social media, message boards and other forms of online communication allow learners to stay in touch and conduct discussions on course materials, thus giving a feel of a community.

1.5 History of E-Learning

The higher education system is undergoing fundamental changes over the past few years, with the advent of technology, the teaching and learning processes have evolved from being content specific, to being more student specific. This appropriate delivery trend has accentuated since the turn of the century with the emergence of new forms of distance delivery that draw upon advances in the various information and communication technologies (ICTs). Internet based delivery of education and no longer be regarded as a fad or the realm of the nerd. It is a vital tool in the quest of universities to face their new learner demographic.

In 1960, the University of Illinois initiated a classroom system based in linked computer terminals where students could access informational resources on a particular course while listening to the lectures that were recorded via some form of remotely linked device like television or audio device (David R. Woolley, 2013).

Computer-based learning made up many early e-learning courses such as those developed by Murray Turoff and Starr Roxanne Hiltz in the 1970s and 80s at the New Jersey Institute of Technology, and the ones developed at the University of Guelph in Canada (Hiltz, S., 1990).

In 1976, Bernard Luskin launched Coastline Community College as a "college without walls" using television station KOCE-TV as a vehicle. By the mid-1980s, accessing course content becomes possible at many college libraries.

It is observed that since past two decades the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavour within business, governance and mostly in education. A new paradigm of education has emerged which incorporates the normalisation of education as an important factor in the process of development while at the same time focussing on the pace of the learner.

Globalisation plays major role in the factorisation of online learning. The integration of e-learning into the education system is viewed as one of the responses to meet growing need for high quality education.

1.6 Characteristics of Online Learning

Online learning has certain amount of characteristics that differentiates it from the normal mode of teaching and learning (M.F.Paulsen, 2003). Some of them are as follows:

a. *Learner Centric Approach:* The focus is from teacher centric and subject centric approach to that upon the learner itself. Here the student itself is the active participant behind its own learning.

b. *Flexibility:* The timings, pace of learning is flexible according to the convenience of the learner. They are not bound to a rigid pattern of teaching and learning methodologies.

c. *Customised/Personal content:* The learning content is determined by a group of learners or by the individual learners based on their needs and aims.

d. *Non-linear content:* This allows direct access to knowledge in whatever sequence the learner wants to learn from. No static format learning is present.

e. *Continual learning:* It is the learning that can take place continuously in parallel loops.

f. *Interactive learning:* This facilitates more chances of having someone at the virtual end to help the learner with their problems.

g. *Dynamic content:* It is the content that changes automatically and continuously for a given user based on the users perspectives like user input, experiences and new practices.

h. *Systematic Learning:* This type of learning gives chance to an integrated learning activity.

i. *Distributed content:* In this type of content, it is equally generated from teacher-learner interactions.

1.6.1 Is an online course alternative of chalk and talk method?

The traditional classrooms with chalk and talk cannot be replaced by online learning but it seems to coexist with the already existing system. "Chalk and talk" is still the predominant method of delivering instructions and traditional face-to-face meetings can still be effective. But one cannot deny that use of an online environment can help in saving course time for discussion, questions, and problem solving, can lead to effective content delivery. Many instructors in different times have found that the use of material outside class can save time and increase student learning. This situation provides opportunity for students to interact face-

to-face and time can be used for troubleshooting. Online discussions give many students the opportunity to express themselves in ways they could not in a regular class. Shyness, uncertainty, or language issues stops students to speak and participate in classroom activities. It is a boon to many students to have the ability to take their time to compose questions and answers in an online discussion, and instructors report much higher participation levels online than in class. Primarily the traditional methods of learning have been in use in the education. But ICT enabled education, training and learning is much more convenient than traditional methods.

1.6.2 Can online course replace teacher in class room?

Technology has immense potential to upgrade today's educational system. "Can technology replace teachers in future classrooms?" still remains a question after exploring several advantages of making use of technology in teaching. At this time the answer is very obvious - the answer is clearly no. No benefits of the technology can ever replace a teacher in the education process.

No matter how advanced or smart a computer program or a product is, it can never come close to the knowledge and life experience a teacher brings. A teacher leads, guides, facilitates and mentors a student. They are role models who set an example to students and drive them towards a brighter future.

1.7 Need for Online Teaching and Learning in higher Education

Over the years, many reasons have come up that has led to a greater demand for e-learning as an alternative method of teaching and learning. Some of them are outlined as below:

a. *Teachers' shortage***:** the quality and quantity of good teachers is a problem that plagues the education system today. Teaching as a profession is not an option for many individuals today.

b. *A3 (any time, any place, any pace) learning:* (Huang, 2010) This enables the learners to take to studying when he/she feels it is convenient to study. This reduces the pressure to come together at a fixed place at a fixed time period.

c. *Enhanced learning experience:* e-learning enables a high degree of personalization and a wide range of instructional methods. Powerful simulation environments, multimedia capability and high-end visualization support enables a learner to relate to the subject much more deeply and hence understands well.

d. *Content creation:* India, despite her IT prowess, is still a poor contributor of content in the Web. Adopting e-learning enables and encourages one to do this naturally, some once work is already online, perhaps with a limited reach and once are comfortable with this, it is a small step to reach out to the world.

e. *Enhancing quality of teaching:* it goes without saying that e-learning can help in strong networking with other teaching and learning professionals widening the area of subject knowledge. (Kumaresen, 2002)

f. *More systematic feedback and evaluation:* Bringing assessment and other activities under e-learning enables to gather much more detailed feedback on various aspects of the course.

1.8 Benefits of Online Learning

Increasingly, organizations are adopting online course as the main delivery method to train employees. At the same time, internet is used by higher education institutions for delivering educational needs to the students on campus and students joining for distance education. A teacher can teach at anytime and from anywhere. Online materials is easy to update and learners are able to learn the changes at once and have access to updated content. When learners are able to access materials on the internet, it is easier for instructors to direct them to appropriate information based on their needs.

- *Multi-access:* Despite teacher, student or tutor, the accessibility of information is made available 24 x 7 days on websites. The challenge part is access of information by users for which project implementers have to update the websites continuously. Adoption of technology in eLearning not only helps the individual but also benefit multiple users at the same time.

- *Speed:* Using electronic resources, Search feature has become quicker and faster to extract the page. Integration of information from one to many, cross-search reference between different publications has become little easy.

- *Functionality:* Starting with content page to Index page with prominent links will ease user navigation skills. E-Resource will also allow user to identify the publication with a single on-mouse click.

- *E-Content:* e-Resources can contain a vast amount of information, but more importantly the material can consist of mixed media i.e. images, video, audio and animation which could not be replicated in print.

- *Storage:* With the increasing storage capacities and multi-variant devices, the ability to store and retrieve large amounts of information has become simple and transparent. Various storage devices like Servers, CD-ROMs, Pen Drives, Hard Disks and Internet Bandwidth are improving their capacities to handle substantial amount of content over the web.

1.9 Challenges and Issues of Online Learning for Higher Education

The recent statistics reveal that there is a dearth of quality teachers for various education programs in the country. It became a major hurdle in providing quality education to students and achieving socio-economic development of the country. Hence, a set of quality experts contribute to build such content that can be made available on websites of the institutes, accessible to all groups of users. To meet this goal, Government of India has recently issued guidelines for online course development (UGC, 2012). Another hassle in manual content is search feature which is of course, dynamic in online resources. Retrieval of vast content is so quick with online search feature in online course resources. But the challenge lies in the internet penetration which is little slow in India, though we have occupied third position beating Japan recently. Only 14% e-literacy is observed against 74% of literacy rate among the country population. E-Learning and online course both are proportionately related to each other in library domain. Particularly, in distance learning institutions the skills up gradation is becoming compulsory. Essentially, the receiver must also possess thorough knowledge in

using these technology based literature and online services. Having insufficient internet bandwidth and power constraints are big challenges in the Indian context. Since the technology depends on expensive tools like server, personal computer, scanner, photocopier etc thus, selection of automation tools will remove economic inequality among the users. A standard tool that can support all the activities of library in a University by providing not only English content but also content that supports other languages going to play a key role (Sharma. P. et al, 2013).

- Inadequate and uncoordinated Information and Communication technology characterized by low access and utilization.

- Lack of formal training in teaching and poor teaching aids/laboratory equipment.

- Sound knowledge of practical examples of use of Open Educational Resources to illustrate key points and up-to-date Knowledge of the arguments for and against use of Open Educational Resources.

- Expertise in technical skills to develop and maintain web platforms to host Open Educational Resources online, as well as to share the content and meta-data with other web platforms.

1.10 Challenges of E-Learning According to Organisational Perspective

Even though the concept of e-learning is set to create major waves in the education sector in the recent years, the challenges are streaming in. Many organizations have embraced e-learning with open arms, but the problems amount to a staggering sky-high heap when it comes to implementing online learning. Some the challenges faced are:

a. *The Internet is still a luxury in many parts of the country*

A vast majority of the Indian population resides in rural areas. The lack of infrastructure in such areas gives rise to connectivity and accessibility issues. However, the Government of India has been instrumental in removing such barriers by implementing various measures. Two schemes have been launched to aid in e-learning implementation:

- National Mission on Education through Information and Communication Technology (NMEICT)

- National Program on Technology Enhanced Learning

These two schemes have been solely launched to implement ICT in video and web-based learning.

b. *E-learning does not cover a lot of certification courses*

The certifications that come with conventional learning is somehow lost in the e-learning concept of education. The e-learning courses do not cover a lot of certification courses that are recognized by colleges and universities across India or abroad. This pulls the e-learning courses out of sync with any stream of school education.

c. *It would take some time to renovate the conventional educational system*

The traditional education methods have enlightened generations for decades now. Even though you might feel that they have overstayed their welcome, it has become increasingly difficult for us to overthrow tradition completely and embrace newer methods of learning with open arms. However, renovation in the old-school methods have seen the light of the day with technology entering the industry. But a complete makeover in education with the e-learning methods would still require some time to establish itself.

d. *Not all learners are tech-savvy*

Even though the e-learning courses are available in a wide range of platforms for learners to choose from, a basic knowledge of how to operate those devices is imperative to benefit from the courses. And being a tech-savvy teacher becomes a primary requisite. Therefore, before e-learning could be implemented, learners and educators need to be educated about the ins and outs of technology to facilitate a smooth learning curve.

e. *Lack of awareness*

If a large part of the population isn't aware of the amazing benefits that e-learning has to offer, then how can it be expected to change the face of education in the coming years? Awareness plays a key role in making the proliferation of e-learning a joy ride. With that lacking, the future becomes questionable. While the challenges pose an impending storm rocking the e-learning ship violently, the numerous benefits calm the waves to a soothing cradle. E-learning streams in like a shining ray of hope, making education accessible for:

- Anyone
- Anywhere
- Anytime

And with the astonishing figures depicting the prospect of a brighter future, e-learning is here to stay.

1.11 UNESCO and Sustainable Development Goal Four focusing on Blended learning as initiative for Quality of Education

Throughout Asia and the Pacific, there are growing demands for more flexible pathways to accessing quality higher education and lifelong learning opportunities for all. Technology offers unprecedented opportunities to meet the needs and expectations of the next generation of learners. Building on increased internet access and mobile platforms, blended learning – i.e. the fusion of online and face-to-face contact time between teaching staff and students provides a means to enhance quality, equity, and access to lifelong learning opportunities, which is a key goal for UNESCO. Issues about the quality of education are at the heart of the Sustainable Development Goals, which were adopted during the United Nations Sustainable Development Summit in September 2015. Sustainable Development Goal four, known as Education 2030, aims to ensure inclusive and equitable quality education and lifelong learning opportunities across all modes of formal and non-formal learning. In this way, blended learning is a valuable approach for UNESCO to help promote inclusive education, including reaching those who are marginalized or in vulnerable situations.

This is especially important in Asia-Pacific – the world's most populous and most disaster prone region – so that learners can continue to study without a physical classroom or campus. In all settings, we need to address essential questions such as: Blending what? Learning what? In other words, how does blended learning work in practice? And how can policymakers and institutional leaders promote effective governance and sustainability of these emerging systems to support lifelong learning? Despite promising practices, the sustainability and scalability of blended learning has been an enormous challenge.

On account of continual rapid advancements in information technology and growing familiarity with that technology among younger generations, several scholars on Blended learning have rationalized complementing traditional classrooms with online tools and materials. Graham, Allen and Ure (2003, 2005) put forth three reasons for utilizing Blended Learning:

1. Through Blended learning teachers can improve their pedagogy by creating a more interactive, student-centered learning environment for students.
2. Using Blended learning provides learners with the increased access and flexibility of online materials and tools without sacrificing the human interaction of Face to Face contexts.
3. Blended learning is much more cost effective than traditional classrooms
According to Graham (2006), "blended learning systems provide an opportunity for reaching a large, globally dispersed audience in a short period of time with consistent, semi-personal

content delivery" (p. 10). Studies on Blended learning (Rovai & Jordan, 2004; Tayebinik & Puteh, 2012) also seemed to indicate that Blended learning courses create a stronger sense of community among learners in a particular context than both completely online learning environments and traditional classrooms. Blended learning can provide learners with the Face to Face human interactions that online courses lack; at the same time, through Blended learning instructors can create a virtual learning space for more introverted students to express themselves, a space which they may not get in Face to Face classrooms dominated by more extroverted peers.

Blended learning in Higher Education

Blended learning is more than just a hot new trend in education—it's the way classrooms of the future will work. The concept behind blended learning is to take the best elements of in-person classroom instruction and online instruction and combine them. In a blended classroom, students attend classes in person and watch lecture videos or complete online activities. By combining online and in-person elements, educators today are creating the best learning environment possible through blended learning. Blended learning has become extremely popular in higher education settings. Blended classrooms allow greater flexibility for students and can encourage non-traditional students to pursue higher education. This approach also saves professors time, as they can record a lecture one time and use it indefinitely, rather than delivering the same lecture to multiple classes each semester. One common approach to blended learning in the college classroom is to use a flipped classroom method. In the flipped classroom, students watch lecture videos or complete readings on their own. During class, students discuss what they learned or complete supplemental activities to enhance their understanding.

With this approach, classes can meet in-person less frequently. Instead of meeting twice a week, professors might assign lecture videos and readings for students to watch on their own time. Class can then meet once a week to discuss, ask questions, and work with the information they have learned. Just like K-12 educators, college professors must think carefully about which elements of their classroom will work best online. Difficult topics that students typically have lots of questions about may not work well in a digital format. Professors must also make sure that they are available online to help students, just as they would be in person.

1.12 Few Notable Initiatives By The Government of India (Ministry of Human Resource Development) in the area of e-learning: -

a. **NPTEL:** NPTEL provides online Web and Video courses in the area of Engineering, Science and Humanities through e-learning mode. The mission of NPTEL is to enhance the quality of engineering education in the country by providing free online courseware.

b. **Virtual Labs:** Virtual Labs aims at providing remote-access to Science and Engineering Labs in various disciplines. These Virtual Labs aims at the students of undergraduate, post graduate as well as to research scholars.

c. **CEC:** Annually CEC organises Video Competition and Prakriti. Prakriti is an annual film festival on environment, human rights & development. Video Competition is an annual competition meant to nurture within media centres and other educational institutes in the country.

d. **E-Yantra:** e-Yantra is an initiative to incorporate Robotics into engineering education with the objective of engaging students and teachers through exciting hands-on application of math, computer science, and engineering principles.

e. **Digital Library Inflibnet:** Former Honourable Dr.A. P. J. Abdul Kalam, the President of India soon after providing the Internet connectivity to the universities in the year 2003 under the UGC-Infonet programme launched the UGC-Infonet Digital Library Consortium in December, 2003.

f. **OSCAR++:** Project OSCAR (Open Source Courseware Animations Repository) provides a repository of web-based interactive animations and simulations that we refer to as learning objects (LOs). These learning objects span topics in science and engineering at the college level, and maths and science at the school level. Students and teachers can view, run and download these learning objects.

g. **E-Kalpa:** 'e-kalpa' is sponsored by the Ministry of Human Resources, Government of India as part of the National Mission in Education through Information and Communication Technology aims 'Creating Digital-learning Environment for Design'.

h. **FOSSEE:** FOSSEE project is part of the National Mission on Education through ICT with the thrust area being "Adaptation and deployment of open source simulation packages equivalent to proprietary software, funded by MHRD, based at the Indian Institute of Technology Bombay (IITB).

1.13   Importance of Online Content Development

Ministry of HRD, Government of India has introduced several online course development programs viz., National Programme on Technology Education Learning (NPTEL) by offering free online video lectures in engineering, science and humanity courses. NPTEL is an open courseware initiative collaboratively started by seven Indian Institutes of Technology (IITs) and Indian Institute of Science (IISc). The objective of this programme is to enhance the quality of engineering education in the country by developing more than 200 curricula-based video and web courses. EnhanceEdu of IIIT Hyderabad is offering teacher training program for engineering college faculty giving importance of electronic content for the Indian society. A Certificate program in Information Technology for engineering college students is also being offered to make them industry-ready in the form of using Learning-By-Doing (LBD) methods. National Mission on Education through ICT, another MHRD initiative that concentrates on developing hands-on workshop and remote learning on electronic stream called 'Virtual Labs'. The objective is to cater both post-graduate and under-graduate students who do not have sufficient infrastructure and lab facilities in the colleges. Through this platform students can participate in this online hands-on workshops. Considering another example of IGNOU, online courses for distance learners was another high quality experiment inspired many other education institutions to deliver online courses in electronic form for students. The advantage of keeping content on Internet is that it helps user to access the information whenever and wherever he/she want.

1.14 Evolution of Online Learning Standards

Most of the technologies have their own standards evolved by different organizations. The Dublin Core was started in 1994 to develop a meta-data framework for web resources. The Dublin Core is a metadata element set intended to facilitate discovery of electronic resources used in museums, libraries, government agencies. US institutions of higher education and their vendor partners established an effort to develop standards for online learning, specifications for metadata in 1997 as the EDUCOM consortium (now EDUCAUSE). Also in 1997, NIST (National Institute for Standards and Technology) and the IEEE study group began similar efforts. Learning Object Design Learning Management Systems (LMSs) are web-based application platforms used to plan, implement, and assess learning processes related to online and offline training, administration and performance management. LMS are defined as systems to manage learners, keeping track of their progress and performance across all types of learning activities. LMSs provide an instructor a way in which to create and deliver content, monitor

learners' participation, and assess learners' performance. In fact many institutions, the Learning Management System may have one or two content-authoring tools. To generate multimedia based content for delivery on the World Wide Web different content-authoring tools are used. Instructional design Instructional design is a systematic, repetitive process of activities aimed at creating a solution for an instructional problem. The steps involved in instructional design are; setting an instructional goal; goal analysis; learning domains; learning outcomes; prepare criterion referenced test questions and a clear instructional strategy.(Dasari. S, 2001). The leaning domains are verbal information, intellectual skills, psychomotor skills and attitudes. The instructional strategies may be drill and practice, tutorials, simulations and educational games.

1.15 Types of Content-Authoring Tools for Online Course Development

The Content-authoring tools are different in nature are; SCORM, AICC, PROMETEUS, ARIADNE, ADL, AASL and LTSC.

(i) **SCORM** (Sharable Courseware Object Reference Model), is a set of specifications that, when applied to course content produces small reusable e-Learning objects;

(ii) **AICC** (Aviation Industry Computer-Based Training Committee), is an international association of technology based training professionals that develops teaching guidelines for the aviation industry. It apply to the development, delivery, and evaluation of online course training courses via technology;

(iii) **PROMETEUS** (Promoting Multimedia Access to Education and Training in European Society) established with a clear underlying ideal to promote access to knowledge, education and online course training for all European citizens;

(iv) **ARIADNE** is a European Union project focusing on the development of tools for producing, managing, and reusing computer based pedagogical elements in University of Lausanne, Switzerland;

(v) **ADL** (Advanced Distributed Learning Initiative) is a program from the US Department of Defence and the White House Office of Science and Technology, to develop guidelines needed for efficient and effective online course learning;

(vi) **AASL** (American Association of School Librarians) has formulated the Information Literacy Standards for Student Learning and it concentrates the student, teacher and administrator;

(vii) **LTSC** (Learning Technologies Standard Committee) has prepared technical standards and guidelines for the use of online course components in Education and it is an internationally accredited Computer Society Standards Activity Board founded by the Institute of Electrical and Electronics Engineers (IEEE)

1.16 Models of Online Course Development

The online course development models are available in five different ways and they are as follows;

(i) An instructional design model by Kemp (1977) defined nine different components and adopted a continuous update with evaluation;

(ii) teaching of media in a systematic approach model by Vernon and Donald (1980) compared the different instruction design models;

(iii) A Systematic Design of Instruction model by Dick and Carey (1990) described all the phases of process starts with instructional goals and ends with summative evaluation;

(iv) Systems Reusable Information Object Strategy by CISCO (1999) consists of six content items viz., introduction; importance; objectives; pre-requisites; scenario; and outline with Learning Management System (LMS) and

(v) Content based model by Cernea (2006) explained the learning objectives of a content and the content's accessibility and reusability between various Learning Content Management System (LCMS).

Any online course development has six phases of development viz., analysis, design, development, testing, implementation and evaluation.

1. *The Analysis Phase:* It is the most important as it identifies area's current situation. The phase accountability considered by the views of subject experts, target audiences, objectives and its goals. In the phase, one must know the audience, skill and budget of the online course, delivery methods and its constraints with due dates.

2. *The Design Phase:* It involves the complete design of the learning solution. It helps to plan of an online course preparation. In this phase, one must plan, use of relevant software; required skills; creative and innovative interactions of subject contents like texts, pictures, videos and suitable animations.

3. *The Development Phase:* It concerns the actual production of the online course design. It helps to create the online course by mixing of texts, audio, video, animations, references, blogs, links, and MCQs (multiple choice questions) with some programming

specifications like home, exit, next etc. The Testing phase: It helps to administer the online course in the actual educational field. In this phase, one must test the spelling mistakes, content errors, clarity of pictures, relevant videos, appropriate audios, timing of animations, and hyperlinks.

4. ***The Implementation Phase:*** It helps to administer the online course to the target audience. This phase explains how to install and how to use it and their difficulties experienced while using online course. It checks the product accuracy and quality maintenance.

5. ***The Evaluation Phase:*** It helps to satisfy the online course and its effectiveness. This phase considers feedback from both learners and instructors. After the feedback reactions, the online course is designed again as post-production for effective delivery of e-content.

Pedagogical Issues in online course Development for Online Courses

Pedagogy describes the collected practices, processes, strategies, procedures, and methods of teaching and learning. It includes knowledge about the objectives of content, assessment pattern, and student learning. The challenges of pedagogical issues in online course are;

(i)   To make the knowledge visible to learners;

(ii)   To make the teachers" thinking visible to learners and

(iii)   To make learners" thinking visible to themselves, their peers, and the teacher.

The pedagogy has evolved largely as the product of pragmatic constraints (e.g. time, class size, linear text books). Planned online course packages have overcome many of these constraints including dictionaries, references and links. A digital text and images designed for display on web pages which is suitable for particular audience is called as „online course". It refers to any content product available in an electronic form and is typically refers to audio, text, and images that are available for distribution on electronic media. (Saxena. A., 2011) in online course development process needs several aspects. Content should follow appropriate instructional design methodology in order to assure meeting of learning objectives and expected outcomes. The effort spent in content preparation should be reusable across various learning management systems. All the online course materials focused on

a) Cognitive perspective: it focuses on the cognitive processes involved in learning as well as how the brain works;

b) Emotional perspective: it focuses on the emotional aspects of learning, like motivation, engagement, fun, etc.;

c) Behavioural perspective: it focuses on the skills and behavioural outcomes of the learning process, role-playing, settings of job and

d) Contextual perspective: it focuses on the environmental and social aspects which can stimulate learning.

The Four Quadrants of Online Course Module for Development of Online Course**:** (Guidelines by the MHRD, National Mission on Education through ICT (NME-ICT), Consortium of Educational Communication (CEC))

i. Quadrant-I (e-Text):

Text should consist of at least 8 pages or minimum 3000 words with detailed write-up on the topic of module in the .rtf/.doc/.odt format. The number of words/pages must be sufficient to make the narrative of the topic clear such that independent learning is also possible. Language should be very simple. Topic should be presented in systematic and logical manner.

The module must consist of the following elements:

• Self-check exercises: • Examples & Applications from day to day life, if applicable • Illustrations (Images, Maps, Graphics (2D & 3D) • Appropriate URLs wherever required • Latest Developments and Trends • Summary

The textual description should also be enriched with multimedia supplements, wherever applicable / possible. Multimedia supplements may include images for which resolution should be about 600 dpi, animations, graphics, video or audio clips, line drawings, hand drawings.

Self-check exercises are problems with answers given to learners that allow them to assess how they are doing on an ongoing basis. Doing them online with self-grading provides immediate feedback. Self-check exercises are to be built in the body of the text. Applications from day to day life, if applicable should be incorporated. For each topic or subtopic, Content Writer should use examples to explain the module, if required. The summary will help a learner to quickly review of the module. Text Format: The text may be divided into sections, subsections and, where necessary, sub-subsections.

a. Fonts: Format the text using a "Times New Roman" or "Arial" font (size 11). Maintain uniform font size and style through-out the text with single line spacing. Assign sequential page numbers to the module.

b. Formatting Sections, Subsections and Sub-subsections: The first section should state clearly the objective of the work, its scope and the main advances reported, with brief references to relevant work.

c. Style, Spacing and Numbering: The preferred format for numbering the sections 1.,2.,3., …. in Times New Roman Bold. The subsection should be numbered as 2.1.,2.2.,2.3., …. in Times New Roman Italics and the sub subsection should be numbered as 2.3.1.,2.3.2., …... in Time New Roman Italics.

ii. Quadrant-II (Self-Learning - Audio/Video)

Content delivery through Video to explain the topic is an essential component (self-learning) of each module of the online course. It may include Multimedia, Animation, Documentary, Simulation, Virtual Lab, etc. as may be appropriate.

The Video must not be like a spoken tutorial (audio narration / voice-over of text mention in presentation slides). A clear visual description as well as text is required. Training demonstration, illustration of examples, case study, documentary, etc. should be added wherever applicable / possible.

It is possible that a content writer / domain expert is not fully acquainted with art of creating multimedia / graphics. In such cases, content writer should describe his / her multimedia requirement using a story board.

The duration of Video should be 30 Minutes. Video tutorial explains the topic of a module. It should be initiated by the content writer / expert. The writer / expert may appear in the video, generally, not less than 25% of the time. Rest of the time which may include in-between sections or sub-sections, or during display of graphics, animations, PPTs and other relevant visuals video timeline may carry writer/expert's voice.

The expert/writer whose video is being recorded should look straight into the lens and talk to the camera. The format of video must be MPEG4. The quality of video should 720x576 (pixel), 25 (frame/second), 450 (TVL resolution), 450 Mbps for incorporation in the template. The audio has to be clear and of superior quality. Ensure that there is no distracting background noise. The equipment used should be professional one.

Presentation: The presentation may be a part of video. The format for presentation would be PPT (PowerPoint Presentation program). During preparation of presentation: • Avoid using long blocks of text. • Use preferably bulleted points. • Use fonts like Arial, Verdana,

Helvetica or Myriad pro etc. • Use font size not less than 20 for clear visibility. • Add graphics and images as much as possible appropriately.

iii. Quadrant-III - (Learn More / Web Resources / Supplementary Materials):

Learn more quadrant is about the supplementary material of respective modules in different forms. These may be in the form of: • Books, articles, research papers, journals, case studies etc. • Links to web sites giving additional readings, Wikipedia, blogs, open source content etc. • Glossary.

iv. Quadrant-IV - (Self-Assessment)

For Self-Assessment, The Content Writer / Expert should provide minimum 10-15 questions for each module in one or more of the following formats.

i) Multiple Choice Questions with Answer

j) True & False Statements

1.17 Characteristics of Online Course Development

According to Anurag Saxena (2011) explained the possible methods of educational online courses conversions are viz.,

(i) learning by doing and learning by investigation;

(ii) learning by using themes;

(iii) learning by testing / evaluation;

(iv) learning by simulation and

(v) learning by role-playing.

As per the UGC (University Grants Commission, India) guidelines of online course development needs the following categories viz.,

(i) home;

(ii) objectives;

(iii) subject mapping;

(iv) summary;

(v) text with pictures & animations;

(vi) video and audio;

(vii) assignments, quiz & tutorial;

(viii) references, glossary & links; case studies;

(ix) FAQ''s;

(x) download;

(xi) blog and

(xii) contact.

These categories are arranged sequentially by subject experts along with technical supporters and to develop the online course materials. e-learning is a process and Online course is a product. Online course is generally designed to guide students through lot of information in a specific task. An online course package can be used as a teacher in the virtual classroom situations. The quality of learning depends not only on the form of how the process is carried out but also on what content is taught and how the content is presented. This approach of teaching has become an answer to the complicated problems and un-identified areas. In a class room, technology stimulates the learner and gets the learner involved in the learning. Books are an extension of brain; video is an extension of eye; audio is the extension of an ear; audio conferencing is the extension of mind & vocal cord; computer is an extension of fusion on mind, hands & eyes; satellite technology is an extension of human reach and computer network is an extension of human co-operation. So expectations from online courses that it should be able to stimulate the learner in such a way that one can utilizes the maximum of its potential in learning (Vijayakumari, 2011) online course is valuable to the pupil and also helpful to teachers for all individual instruction systems; online course is the latest method of instruction that has attracted more attention to gather with different concepts.

The ultimate aim of the online course is abolish the disparity among the learners through effective education. Online course is facilitating to the teacher to effective manner. It is enhancing the learner knowledge level which leads to creative thinking and it gives the future ideas on the basis of given links, and references.

e-learning comprises all forms of electronically supported learning and teaching. The Information and communication systems whether networked learning or not, serve as specific media to implement the learning process. It may be classified as Online and Offline. The online learning occurred through, e-forum, SMS / MMS, Search engines, Meta search engines, e-dictionaries, e-books and e-journals. Whereas the off-line learning occurred through MS Office applications, power-point presentations, downloaded documents and CD ROMs.

There is a need of innovative work in the area of online course material as a form of digital literacy in educational settings particularly to investigate the implications of new forms of social networking, knowledge sharing and knowledge building. And finally, because of the

pervasive nature of online course as a digital technology, the commercial interest that is invested in it and the largely unregulated content of internet-based sources; one also needs to begin to sketch out what a critical digital literacy might look like. There is, in short, plenty to be done if it is aimed to prepare children and young people to play an active and critical part in the digital future. Looking at the above view the researcher had few questions:

Research Questions:

➢ Can e-learning be a solution to issues in Higher Education?

➢ Can students with minimum exposure to ICT learn through online courses?

➢ Can an online course be designed with the use of available software/ open access software?

➢ Can an online course be implemented/ executed with minimum infrastructure in class?

➢ Can we develop an online course for undergraduate students?

➢ Can online learning be implemented effectively with students with heterogeneous background?

➢ Can students gain higher knowledge by learning through online course than tradition ways?

1.18 Need of an Online Course for the students of Family and Community Sciences/ Home Science:

- Majority of the students admitted in the Home Science/ Family and Community Sciences are from Gujarati or vernacular medium schools. Against this phenomena the courses offered at the University are through instruction in English language only. This makes it difficult for the students to grasp.

- It was observed and learnt that the students who college attended college form a heterogeneous group with diverse, languages, past experiences and abilities of perception. They also bring with them different educational backgrounds. Hence they may find the subjects on the curriculum to be as an alien to their knowledge and understanding.

- The semester system, which allows just 90 days to complete the study, poses additional problems to students to a new setup of educational programme. They feel everything is being compressed beyond limits and they feel their pressure badly.

- With all this, absenteeism remains a wide spread temptation amongst girl students' tendency on multiple grounds like responsibility at home, health problems, natural calamities and unrest on the University campus.

- In the recent times, the Family and Community Sciences students have increasingly started taking up part time jobs to shoulder the economic burden of the family and to satisfy other materialistic needs. This may divert their attention from academics.

- Whether out of compelling condition or tendency formation, if students keep away from regular training programmes it will have a seasonal effect on the quality of student graduates that the system churns out. Hence, a need may be felt in the present contact to provide an optional way to study at ones own pace. The e-course facilitates a kind of self-study on the part of students in which teachers may view their role as counselors or facilitators.

- For higher education, the needs are diverse as compared to education at schools. More of conceptual information need to be given to students and much of self-learning has to take place. The online course may provide an opportunity to impart conceptual information in detail with facts and figures.

- The students who join Home Science / Family and Community Sciences course, majority of them are Low and average achievers. Their IQ and level of grasping is low. Maximum of high achievers tend to join professional course. Whereas it is assumed that online course may help average and low achievers to learn better and at their own pace to perform better.

- Some of the course which we have are really dry and theory based courses which makes learning quite monotonous and demotivates students to learn those courses, online learning can make such heavy theatrical and dry subject most interesting and easy to comprehend. The gaming and visual may lead to better comprehension of subject and can lead to longer retention of knowledge.

1.19 Need to Develop Online course on Introduction to Extension and Communication

The researcher decided of designing an online course on a foundation course for the students of Faculty of Family and Community Sciences. It was thus, decided to develop a course on "Introduction to Extension and Communication" which is offered to undergraduate students at introductory level. It was decided to develop an online course on this subject as the research has her specialisation in the same discipline and the researcher has taught this subject at

undergraduate level for four years. The course is offered to undergraduate students in first year in first semester. The course has both theory and practical aspects. It was decided to develop online course on this subject as students do not have prior knowledge or exposure about the subject during their schooling. The students come from varied background that includes their medium of instruction, their stream of study and their socio-economic status. Thus it was decided to design an online course on subject "Introduction to Extension and Communication".

It was also found that most of the Home Science colleges offer this course at undergraduate level. The base of the course was taken from the outline laid by Department of Extension and Communication, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara. It is an approved course structure from university board of studies. The course offered is (2+1) = 3Credit course. That includes 2 credits theory and 1 credit practical. Looking at the existing course outline learning objectives and learning experiences for the learners were drawn. The language of the course, the reference material and level of difficulty in the course was discussed with the course teachers of the Department to make it more learner centric. A clear guideline with leaning objectives and outcomes were formatted with the help of course outline and course teachers teaching the same course. The outputs were laid down as guideline and inputs for the design phase.

The first year students are generally the fresh pass out from 12th standard from school. They are usually habituated with the formal classroom learning system, where they learn from a teacher. Physical presence of teacher is very essential for students at that phase. They are not at the age and phase of life where they remain responsible for their learning and regulate their study time. Whereas, absence of teacher makes students insecure and inattentive towards learning as they are fresh passed out from school. They are young and excited towards new learning environment. The first year students who are 18 years old are competitive demanding. They are more comfortable and used to the use of new age media. By keeping the above possibilities in mind it was thought of teaching online course in blended mode. Teacher as a complementary aspect of teaching learning process.

1.20 Objectives of the Study:

▶ To design an Online course on "Introduction to Extension and Communication" offered to the first year students of Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara

▶ To validate the designed Online course on "Introduction to Extension and Communication" offered to the first year students of Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara

▶ To study the effectiveness of the designed Online course on "Introduction to Extension and Communication" in terms of gain in knowledge amongst the first year students of Faculty of Family and Community Sciences

▶ To study the significant differences in the effectiveness of the designed online course on "Introduction to Extension & Communication" in terms of gain in knowledge within the First year students in relation with the following variables:

- Medium of instruction at school
- Stream of Study in Higher Secondary Examination/ Equivalent
- Level of Education of Parents
- Family Income
- Usage of Computer and internet user
- Exposure to ICT
- Budget for Internet Usage

▶ To study the reactions and feedback of the first year students regarding designed Online course in reference to:

- Features
- Aspects
- Problems Faced while leaning
- Suggestions

1.21 Null Hypothesis

▶ There will be no significant difference in effectiveness of designed Online course on "Introduction to Extension and Communication" between the pre and post gain in knowledge amongst the first year students of Faculty Of Family And Community Sciences

▶ There will be no significant differences in the effectiveness of the designed Online course on "Introduction to Extension & Communication" in terms of gain in knowledge within the first year students in relation with the following variables:

- Medium of instruction at school
- Stream of Study in Higher Secondary Examination/ Equivalent

- Level of Education of Parents

- Family Income

- Usage of Computer and internet user

- Exposure to ICT

- Budget for spent Internet Usage

1.22 Assumptions of the Study

▶ It is possible to design an online course for undergraduate students in higher education

▶ Online Courses can be an effective mode for the Higher Education

▶ The group of students selected for the study will vary in relation to:

- Medium of instruction at school

- Stream of Study in Higher Secondary Examination/ Equivalent

- Level of Education of Parents

- Family Income

- Usage of Computer and internet user

- Exposure to ICT

- Budget for spent Internet Usage

1.23 Delimitation of the Study:

▶ The Study is delimited to the first year students of Faculty of Family and Community Sciences, Maharaja Sayajirao University of Baroda, Vadodara

▶ The study is delimited to check the effectiveness of an Online course on "Introduction to Extension and Communication" in terms of gain in knowledge amongst the first year students of Faculty of Family and Community Sciences

▶ The study is delimited to study the following variables

- Medium of instruction at school

- Stream of Study in Higher Secondary Examination/ Equivalent

- Level of Education of Parents

- Usage of Computer and internet user

- Exposure to ICT

- Budget spent Internet Usage