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## E-Learning and Desired Learning Outcomes

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### 1. Introduction

A “net generation” of computer literate and computer sophisticated students are arriving at the gates of primary, secondary and tertiary institutions. The commensurate ability of faculty is now in question. The revolutionary socio-cultural transformations created by e-learning in the manner knowledge is generated, organized, retrieved, managed and purveyed across the different geographical, political, socio-economic and cultural boundaries must be thoroughly considered for any advancement in pedagogics. Proposals have been forthcoming to reform teaching and learning and make it compatible with the new competitive information and communication technologies environment. The architecture, diversity and apparent contradictions between these proposals render the public policy dialog scattered and confused. Within this context this chapter considers the identity, variety and destiny in productive e-learning with specific reference to desired learning outcomes and introduces the idea of a ‘virtual space’ delineated by two dimensions—‘learning experience, namely, face to face intervention’ and ‘geographical space’. These lay out the contours of the emerging intellectual landscape by placing past practices as well as present proposals on the same conceptual plane. The current approach to universal education continues to be bound by the self-imposed limitations of past regulations and that a heterogeneous universal educational policy is likely to be more suited to the new e-learning environment. Undoubtedly, effective learning through e-learning has become an issue of major discussions. As a result a set of vocabulary associated with lifelong learning is being developed to accommodate learning outcomes associated with e-learning. Having identified issues surrounding productive e-learning, desired learning outcomes are then presented. The two questions bearing on educational institutions are: how will these changes affect the institutions’ academic mission and conduct? And secondly, how would institutions react to these changes? Finally, student motivation in terms of hierarchy of needs is considered in the light learning outcomes.

### 2. E-learning - Didactics

Conceptually, learning outcomes are associated with the learner being able to do a required task by the end of a defined period of time. The knowledge or skills will need to be demonstrated. Traditionally learning outcomes were easily stated and observed in behavioral terms. However, with the onslaught of e-learning the challenge is to equate learning outcomes with artificial intelligence. This brings one to the issue: how does one measure inquiry and analysis, critical and creative thinking, written and oral communication; quantitative literacy;

information literacy; teamwork and finally problem solving. Katz & Oblinger (2000) contend that the prevailing research on e-learning that focuses predominantly on instructional programming, and on the development of hardware and software, essentially neglects the more social, human and cultural perspectives on e-learning. The continued technological revolution, as a result of the introduction of the internet and upgraded and affordable computers, has changed the fabric of human society in fundamental ways. Every facet of business, commerce, governance, politics and education are being redefined. Moreover, Katz & Oblinger (2000) suggest that in a networked world, one can add an “e” to almost anything. There is no question that education is becoming an issue of major concern within e-learning. Understanding how one learns in an information age is critical to the advancement of a society. This would ensure that society will be able to maximize the learning outcomes by applying it strategically to improve the quality of life for all.

At the European Council in Lisbon in March 2000, Heads of State set an ambitious target for Europe to become within ten years “the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion”. They also placed education firmly at the top of the political agenda, calling for education and training systems to be adapted to meet this challenge. As governments focus on more private participation in higher education and e-learning in particular, the quality of education also remains a major area of concern. These concerns include: creating lifelong learning and learner mobility a reality, improving the quality and efficiency of provisions and outcomes, promoting equity and active citizenship and enhancing innovation and creativity at all levels of education and training. In an era where knowledge is the key to economic growth and development, education has never been so vitally important. The ‘knowledge gap’ between rich and poor countries is certainly widening, causing less developed countries to become further marginalized, socially, politically and economically. Establishing productive e-learning solutions to the challenges faced by poor countries in particular is paramount. E-learning becomes a major solution as other alternatives are becoming economically untenable.

The ICT (information and communication technologies) have provided the tools for easy access to quality education. The possibility for educational programs to be targeted to different group settings is enormous. These group settings could include *inter alia*, women and men who are faced with cultural and religious barriers, the socially, physically and mentally challenged, learning disabled and handicapped, the marginalized and those seeking continuing education. Education, once considered largely the prerogative of the rich becomes ubiquitous as a result of ICT. A comparison of the opportunities that are accorded by e-learning is reflected by the following Table 1.

While Table 1 is self explanatory, traditional schooling which was the manifestation of the industrial age required learners to achieve certain outcomes consistent with the demands of that time. The content was designed to meet certain minimum requirement. An analysis of textbooks would suggest that a mastery of the content provided a learner with the minimum knowledge required for the subject discipline. Educators who played a meaningful role were the custodians of what ought to be studied at the various different levels. During this age one could leave the education policy making to the policy makers, educational administrating to the administrators, parenting to parents, and teaching and learning to educators. Each had a specific role to play. In the information age everything becomes so

INFORMATION AND COMMUNICATION TECHNOLOGIES (Information Age)	TRADITIONAL SCHOOLING (Industrial Age)
World of learning	World of knowledge
Customized	Standardized for groups
Freedom with certain accountabilities	Predetermined control
Co-operative and social relations	Individual performance
Collective decision making	Unilateral decision making
Taking on initiatives	Compliance
Rich and diverse thinking	Conformity
Shared networks	One way communication with some feedback
Holistic	Systems
Concerned with process	Concerned with parts
Learning and learners are paramount	Teaching and teachers are paramount
Multiple media	Usually face to face with print media

Table 1. Comparison of the opportunities that are accorded by e-learning

blurred. However, despite the vast advancements made, teachers are still the principal agents of education but the methodology and roles are vastly different. Educators become an agent not only to represent learners but to match learners' needs with the overall aim and outcomes of education. Educators facilitate the learning process and become caring mentors. Learners become gainfully engaged in their pursuits. An underlying assumption associated with learning within the information age is that learners have the capacity for responsible actions, that they have a natural desire to learn and understand things, and that they have the desire to do their best. In this regard Self Determination Theory (SDT) addresses several basic issues associated with cognitive, affective and psycho-motor development. Regulation and perception of the self, one's psychological and emotional needs, life goals and aspirations, individual dynamism, culture and the impacts of social environments are key issues that determine the learners' ability to self actualize. Self actualization is the focus of the information age. Motivation within this assumes a different dimension. Technology facilitates record keeping for student learning in several different forms: standard inventory of learning, personal attainments inventory, and personal characteristics inventory. Accomplishments in learning can be immediately assessed and evaluated by the learner.

### 3. ICT and knowledge capital

ICT endows one with capital. In this regard the working population is offered a pragmatic way of upgrading their **human capital** which is traditionally considered as the knowledge, skills and competences and other attributes embodied in individuals that are relevant to economic activity. One's duration of schooling and one's level of qualification were the standard metrics used to measure human capital. Whilst, these metrics do not adequately capture the extent of human capital, **cultural capital**, on the other hand, is a more academic notion, referring to the credentials and cultural assets embodied in individuals and their families. Cultural capital is used to explain the reproduction of social hierarchy. Elite families usually endow their children with the cultural capital which enables them to succeed in

maintaining their elite position. Countries that are well governed and show a high concern for human dignity also endow their citizens with cultural capital too. In these countries an investment in education allows one to move from non-elite positions into elite positions.

Finally, **social capital** could be defined in terms of faith, trust, norms and at levels of expressed trust in other people. Social capital allows agents and institutions to be more effective in achieving common objectives. The most common measures of social capital include one's participation in various forms of civic engagements, membership to voluntary associations, place of worship and political parties. Social capital has been deployed to explain a wide range of social phenomena, including general economic performance, levels of crime and disorder, immigrant employment and health trends. Despite some ambiguity, social capital is generally understood as a matter of relationships, as a property of groups rather than the property of individuals. Moreover, social capital itself can have socially undesirable effects, where trust and mutuality operate to enhance inequalities, exclusion or even criminality.

Undoubtedly, education plays a major role in the creation and development of each of these capitals. The key question is to what extent e-learning through ICT will be able to raise these capitals to higher levels than traditional schooling. In this regard the role of social media and networking in creating an awareness and a certain mode of conduct cannot be underestimated.

FORMS	DESCRIPTION	METRIC
HUMAN	Knowledge, skills and competences and other attributes embodied in individuals that are relevant to economic activity.	Traditional: Duration of schooling; level of educational and professional qualification. ICT Metric: would include constant engagement in ICT learning and knowledge environment
CULTURAL	Is a more academic notion, referring to the credentials and cultural assets embodied in individuals and their families. Used to explain the reproduction of social hierarchy - elite families and elite societies.	Traditional: Governance standards. Role of the governments in empowering societies and nation-building. ICT Metric: Use of ICT communication
SOCIAL	Capital that allows agents and institutions to be more effective in achieving common objectives. Usually deployed to explain a wide range of social phenomena, including general economic performance, levels of crime and disorder, immigrant employment and health trends. Generally understood as a property of groups rather than the property of individuals.	Traditional: Participation and engagement in civic roles, membership to voluntary associations, places of worship and political parties.  ICT Metric: Developing social networks and moral lives.

Table 2. Human, social and cultural capital mission of universities

Upon examining the missions of universities as a formal educational institution, the following, amongst others, would emerge as key words: life-long learning; critical thinking and empowerment. "Learn, think and become" is a slogan that eloquently captures the pivotal role of the university in countries that have a satisfactory record of good and clean governance (democracy). These countries would immediately instill in their universities minimum standards of good and clean governance and values associated with the pursuit of truth. Within this universities would have to determine what is relevant in terms of epistemology (knowledge) and axiology (values). Moreover, Deer (2001) maintains that universities also play a vital role in ensuring that minimum standards of civil conduct exist. Public universities in democratic countries are usually in the public domain and tend to make this their pre-occupation and keep political institutions in check and balance and thereby establishing themselves as institutions for common good. In these counties, private or corporatized universities in particular tend to pursue different objectives. Countries where poor governance structures exist and where corruption is a manifestation, private universities tend to play another meaningful role. Institutions within this environment having indomitable courage become agents of change. Table 3 reflects the meaningful roles played by formal educational institutions in different types democracies. In essence Table 3 shows that poorly governed economies tend to endure lower standards of public education. This is a major cause for concern and therefore ICT constitutes a solution.

	<b>Formal Public Educational Institutions</b>	<b>Formal Private Educational Institutions - Accredited</b>
<b>Poor to moderate governance structures</b>	Usually to the right of the government. Institutions are in the public domain. Tend not to question the government - sole providers of the funds. Usually do not respond to the enormous pressures of the day. <b>ICT potential - poor.</b>	Usually to the left of the government. Institutions are not in the public domain. Tend to challenge governments discretely. Pro-democracy institutions. Establishing themselves as agents of change. <b>ICT potential - could be limited.</b>
<b>Moderate to rich governance structures</b>	These institutions reflect themselves as institutions for common good. Ensure that society receive the basic education at minimum acceptable levels. Funding is received from public coffers. <b>ICT potential - minimum.</b>	Tend to take education to higher levels. Have highly enriched curriculum and attract highly motivated students. Funding is external. <b>ICT potential - enormous.</b>

Table 3. Role of educational institutions - taking learning to another degree medieval education identified as T<sub>2</sub> - traditional learning

Prior to the introduction of formal schooling, education was imparted at home or to groups of children by village elders. The only children who went to school were those of the wealthy and the nobility who were taught classical languages and history. This would accord them a certain status and did not particularly make them creative members of

society. Private home tuition actually began with the advent of primitive man. When the first cave dwellers taught their children how to hunt, they were being privately educated. Even today, private home education is a part of every child's upbringing. Everything a child knows that allows him to function in society is a result of knowledge imparted in the home by the parents. In the United States of America, the early colonists had little time to worry about formal education. What the children learned was what they needed to know to keep the household going. The few parents who were themselves literate would, at the most, pass on the ability to read and write. It was only when the country began to move from an agrarian economy to a manufacturing and trading one that education as a means of earning a living came into being. Since the U.S. was still primarily a rural society, once again it was the parents who set up the informal home schools – teaching their children what they knew, asking for help from the local elders and, when money was available, paying for a teacher to come for a few weeks or months to teach the children. Enlightened governments throughout the world out of a concern for education made schooling somewhat mandatory for all children. Schooling was on its way to becoming universal. However, a backlash began to develop towards the regimented and often mindless way formal schooling tried to impart education. The low standards of the schools were also a cause for concern.

#### **4. Common good education during the industrial revolution T<sub>1</sub>**

The Industrial Revolution had a profound effect on all levels of society in the late 18th and early 19th centuries. How people lived and worked changed significantly during this time. As a result education consistent with the revolution changed the productive capacity of England, Europe and United States. The revolution was something more than just new machines, smoke-belching factories, increased productivity and an increased standard of living. It was a revolution which transformed English, European, and American societies. Like the Reformation or the French Revolution, no one was left unaffected. Everyone was touched in one way or another, peasants and nobles, parents and children, artisans and captains of industry. The Industrial Revolution serves as a key to the origins of modern Western society. Perkin (2009) has observed, the Industrial Revolution was no mere sequence of changes in industrial techniques and production, but a social revolution with social causes as well as profound social effects.

#### **5. Education for economic change identified as T<sub>0</sub>**

Vast differences exist between earlier and current forms of flexible learning. The earlier type was characterized by print media and then notably computer-based instruction which focused on the interaction between the student and technology namely the computer. The current prevailing paradigm is technology mediated communication where the primary form of interaction is between students and instructors, mediated by the computer. Computer-based instruction entailed individualized (self-learning) whilst computer mediated communication involves human facilitation. According to Williams (2002) the nature of learning and the possibilities of learning open to learners are numerous. E-learning becomes an answer to the challenge of lifelong education in the globalised market.

Traditionally the fundamental objective of good institutions generating and purveying knowledge is the ability to inculcate critical and noble thinking for common good. Within this framework, one should enquire as to what entails a reasonable return on investment in

education. Undoubtedly, one should not expect a response associated with a student that can think critically and nobly and act with goodness despite the fact that these are missions of academic institutions. Traditionally, academic institutions in a particular society recruited students from diverse different communities and these institutions became more agents of socio-economic and political changes. Brick and mortar institutions facilitated socio-economic and political changes through diverse productive activities, one being face to face teaching and learning activities. The power of spoken words in this didactic approach creates an awareness and develops an *esprit de corps* among faculty and students in pursuing common objectives and at times these objectives are revolutionary in nature and institutions become more a geographic location where students and faculty vent their feelings and at times in violent ways.

Virtual institutions or flexible learning institutions are a major paradigm shift from the traditional brick and mortar institutions which for centuries have been the custodian of rich human thinking and pedagogy. One can consider e-Learning as another mode of learning in a continuum ranging from completely virtual to completely brick and mortar. The quest for universities to move the boundaries of the classroom is ever increasing. Utilizing technology has not only impacted on organizational and logistical procedures but also on learning outcomes and curriculum that is no longer linear. It therefore becomes imperative to match technological driven solutions to problems with desired learning outcomes. Garrison and Anderson (2002) contend that in order to make virtual e-Learning a viable future didactic approach one has to determine whether the use of modern technology enhances productive student learning consistent with the overall objective of education. Should the economic and social performance of a country be determined to a large extent by the citizens' relationship with technology, then the economy needs to exploit the potential of new technologies in its education. The incorporation of captivating media into a web-based teaching and learning experience is what the future holds for e-Learning. If this holds true then an educator will change how (s)he teaches, and this necessitates a change in what students need to learn. Consequently, the issue of quality is at the forefront of many debates on e-Learning. While this may be an issue, one needs to progress beyond and determine the identity of e-education, the variety of e-education and the destiny of e-education within the changed paradigm.

## 6. Education for social and cultural change identified as T<sub>+1</sub>

Developing countries which invest in better education, healthcare, and job training produce surging economic growth and sharply reduced poverty. Failure to seize this opportunity to train citizens more effectively for the workplace, and to be active citizens, could lead to widespread disillusionment and social tensions. 'Culture' (in its simplest sense) is said to be 'the way of life' or 'the way in which one does things. Faculty need to adopt student-centred approaches and consider teaching in an outcomes-focused environment. This is quite a degree of cultural change. What many staff are faced with is a massive reassessment of their role – what they are expected to know, to do and to be – even those who thought they were (and were acknowledged as) good teachers in the first place. An outcomes approach to education requires a shift in emphasis from focusing on teaching to focusing on learning. A student-centred approach to education requires focusing on the learner rather than on the syllabus. For most academics, this is a major shift in their understanding of 'the way in which we do things' in a university.



## 7. The future of education T<sub>+2</sub>

Advances in technology have produced numerous alternatives to the traditional brick and mortar institutions. Typical examples would include call centers. Classroom methods of delivery would need to change to accommodate changes in learning. Therefore the manner in which teaching and learning is accomplished needs to be considered in the light of technological advancement. Moreover, the use of computer networks unites educators and learners. This study firstly, identified the evolution of education from traditional and bureaucratic structures to highly technological laissez faire driven e-Learning. Since education is an industry, this necessitates flexible learning. A radical shift in brick and mortar institutions education began with distance learning that commenced with print technology. Major technological advances were made subsequently to distance education. This entailed the use of audio-video equipments. Traditional institutions are identified in the accompanying Figure 1 as those having high investment in brick and mortar and high

<p>T<sub>-1</sub>(Traditional institutions)</p> <p>Distance Education (Print Media satellite based)</p> <p>Private Education T<sub>-2</sub>(Traditional learning)</p> <p>T<sub>0</sub> (Today)</p>	<p>High</p> <p>Brick and Mortar</p> <p>Low</p>	<p>T<sub>+1</sub> (Tomorrow)</p> <p>Conversion of traditional schooling</p>
<p>HIGH</p> <p>Learning experiences enabled by face to face</p>	<p>LOW</p>	<p>LOW</p> <p>Learning experiences enabled by technology</p> <p>HIGH</p>
	<p>L</p> <p>Virtual Environment</p> <p>H</p>	<p>T<sub>0</sub> (Today) (Technology driven distance education)</p> <p><i>"I never try to teach my students anything, I only try to create an environment in which they can learn."</i></p> <p>T<sub>+2</sub> (Future) Conversion of traditional instructors to virtual support.</p>

Fig. 1. The evolution of e-learning

investment in learning experiences through face-to-face contact. Virtual institutions are identified as institutions having high investment in learning experiences enabled by technology and a high investment in the virtual environment. The identity, variety and destiny in pedagogy are identified in terms of different time periods  $T_{-2}$ ,  $T_{-1}$ ,  $T_0$ ,  $T_{+1}$ , and  $T_{+2}$ , where  $T_0$  represents today.

Exploratory studies considering students learning taking place in two different positions in  $T_{-1}$ , and  $T_0$  were conducted among corporate financial students who were able and willing to attend classes and students who were unable to attend the regular classes. They were subjected to a series of examination. In both periods  $T_{-1}$  and  $T_0$ , the findings suggest that students who did not attend classes but continued learning online performed worse than students who attended classes regularly and participated in class discussions. Students who did not attend classes tended to seek help from the proctors more often than students who attended the classes. Face to face learning experiences ensured a more holistic evaluation of the student than technology driven e-Learning.

## 8. Changes in the academia

E-Learning has rapidly become a major influence on how instructional materials are provided. As institutions are increasingly turning to e-Learning to deliver teaching and learning material, the underlying conceptualization of many e-learning courses is based on models found in traditional classroom instruction. New technology may not be found relevant in a model of classroom-based instruction that is suited for traditional brick and mortar institutions.

Educational professionals are required to change as a result of ICT. These changes do not only include the manner in which one teaches, and the manner in which they conduct and publish research. Student progress, catalogs, course guides, course schedules, and syllabuses will all be online and linked to each other. Changes will entail a development of key learning outcomes consistent with taxonomy of objectives in the cognitive domain: knowledge, comprehension, application, analysis, synthesis and evaluation. **Knowledge** entails remembering recalling terms, facts, and details without necessarily understanding the concept. **Comprehension** entails understanding and students could summarize and describe main ideas in own words without necessarily relating it to anything. **Application** entails transferring learning to own life or to a context different than one in which it was learned. **Analysis** entails relating and breaking material into parts, describing patterns and relationships among parts. **Synthesis** entails creating something new by combining parts to form a unique solution to a problem. **Evaluation** entails judging and expressing own opinion, judge or value based on expressed criteria, ideas and methods. Following the 1948 Convention of the American Psychological Association, Benjamin Bloom took a lead in formulating the classification of "the goals of the educational process". While the cognitive domain involves knowledge and the development of intellectual attitudes and skills, the other domains are the affective Domain and the psychomotor domain that needs to be addressed.

Applying Bloom's taxonomy to e-learning will result in a taxonomy of this nature:

	<b>BLOOM'S TAXONOMY</b>	<b>RECOMMENDATION E-LEARNING</b>
Knowledge	Remembering	Content awareness
Comprehension	Understanding	Online chatting
Application	Transferring	Meaningful online conversation
Analysis	Relating	Drawing on other's experiences
Synthesis	Creating	Developing own arguments based on analysis
Evaluation	Expressing	Learning in action

Table 4. Taxonomy of e-learning

In developing the cognitive objectives one need to establish at what level of motivation the students are. In E-Learning systems that utilize the computer networks, it is difficult to grasp the students' motivation to learn because there is little face-to-face communication between the instructors and the students. Despite this, faculty instructors are required to make very effective teaching strategies. In this regard the theories of Maslow who presents a hierarchy of five levels of basic needs may be best used. Maslow has set up a hierarchy of five levels of basic needs. In the levels of the five basic needs, the person does not feel the second need until the demands of the first have been satisfied, nor the third until the second has been satisfied, and so on. Maslow's basic needs are as follows: **Physiological Needs** These are biological needs. They consist of needs for oxygen, food, water, and a relatively constant body temperature. They are the strongest needs because if a person were deprived of all needs, the physiological ones would come first in the person's search for satisfaction. **Safety Needs** When all physiological needs are satisfied and are no longer controlling thoughts and behaviors, the needs for security can become active. Children often display the signs of insecurity and the need to be safe. **Needs of Love, Affection and Belongingness** When the needs for safety and for physiological well-being are satisfied, the next class of needs for love, affection and belongingness can emerge. Maslow states that people seek to overcome feelings of loneliness and alienation. This involves both giving and receiving love, affection and the sense of belonging. **Needs for Esteem** When the first three classes of needs are satisfied, the needs for esteem can become dominant. These involve needs for both self-esteem and for the esteem a person gets from others. Humans have a need for a stable, firmly based, high level of self-respect, and respect from others. When these needs are satisfied, the students feel self-confident and valuable. When these needs are frustrated, the students feels inferior, weak, helpless and worthless. **Needs for Self-Actualization** When all of the foregoing needs are satisfied, then and only then are the needs for self-actualization activated.

Maslow describes self-actualization as a person's need to be and do that which the person was "born to do." Educators at all levels need to understand student motivations. Students take online classes with every intention of completing them, but may fail for a variety of reasons. Studies have shown completion rates to be 40% lower for online learning. Success or failure of online instruction can be related to student motivation (Picar, 2004). Successful students manifest the following characteristics: highly motivated to accomplish learning goals; have some familiarity with subject; college level reading and writing comprehension; strong study and time management skills; achievement oriented; support network of friends or family; good physical and emotional health; and has access to other learning resources.

Intrinsic and extrinsic motivators affect students when participating in an online class. Intrinsic motivation is the completion of a task for the sense of mastery, competence and well being connected to the work done in class. The task motivates itself. Extrinsic motivation is the external reward after completion of the task. A few examples include grades, recognition from an instructor. According to Keller (1999), four elements of motivation must be addressed in on-line education. These include, attention; relevance; confidence and satisfaction. **Attention** - When a student feels isolated by working independently attention problem occur. Presentation of online content must be engaging to the student. Perception Stimulation is needed to surprise student by being shown the unexpected. An instructor can ask a thought provoking question online. The students can also generate their own questions to help guide their learning. This will help the instructor see what is important to the students and be able to reach their expectations. Different types of examples could be used to demonstrate a concept. **Relevance-** Students must find the content to be relevant to their goals and intentions. Instructors should determine student's knowledge and skills before presenting content. Students can fill out a quick online assessment so that the teacher can teach concepts that build on student's previous experience and knowledge. Course objectives should be related to the students' goals. Have the students relate their goals to the instructional objectives for the course and share this with the instructor and students online. Content should ideally be matched to student's preferences and knowledge. Teach what students want to learn. If there is a content area in class that students want to focus on, let that guide topics for the class. **Confidence** - Students only gain confidence when they achieve course goals. Student should be made aware of performance criteria for success. Performance criteria should include online participation in class as well as assignments. This should always be posted in online. Instructors can allow students to set the assessment criteria to evaluate their performance. Student can also choose areas of interest that are related to their learning goals and personal interests. This can be done through posting on chat lines where students collaborate and the teacher can review the postings. Providing immediate feedback for an online class is important so that the student does not feel isolated. Feedback can be immediate through an online test to confirm an answer. Informative feedback directs students to other resources. Analytical feedback guides a student to the correct answer. Immediate feedback keeps a student on track. **Satisfaction** - Student satisfaction is more likely if he can transfer the learning to his own experiences. Student can apply their knowledge to a real situation. The student can solve the problem by choosing the correct actions. Immediate feedback within the program provides reinforcement. This helps motivate students to be more engaged in their learning.

## 9. Teaching and learning in the information age

One of the fundamental tenets of education is preparation of students for life. Moreover, information is the major component of education. The availability of high speed computing infrastructure was the primary movement in the learning revolution. Combining a multitude of resources with the accessibility of personal computing devices give students access to vast amounts of information and have move the locus of power from the teacher to the learner. Traditionally, educational pursuits of societies and intellectual functioning of individual have their origins in social life. This position stresses the role which stakeholders

play in learning and points to the importance of creating “classroom environments” which support the communication and exchange of ideas. Ideally students will become engaged in learning by participating in communities where learning is valued. These communities may be virtual and may be mediated by technical and cognitive tools. Cole & Engestrom (1993) contend that the master tool broadly conceived is language, the ability to communicate one’s thought consistent with that of any face to face discussions. Educators need to consider the learner in relation to his technological and social resources whose interaction and their contexts are central to understanding the conditions for human learning. Learners are becoming active constructors of new knowledge and understanding based on what they already know and believe.

The modern day infrastructure places unimagined power in the hands of individual learners who have come work according to their own abilities and at varying speeds. The traditional classrooms typically having rows of students sitting side by side, gazing straight ahead at a teacher who is the purveyor of knowledge are slowly becoming a thing of the past. Realizing that computing technologies have impacted every aspect of human endeavor, educators need to transform learning activity into an innovative form of experience. The increasing interest in e-learning stems from several dynamic changes that include direct changes in social, political and economic conduct. Corporate conduct and market behavior have also played an important role in this regard. Corporations in particular see advantages in making their products and services ubiquitous through technology impacting upon society in numerous different ways. The internet has significantly changed the way lifestyle is delivered and facilitated in both educational and non-educational settings. The proponents of e-learning are largely positive and optimistic about its potential. Education is inherently a social endeavor. It therefore becomes essential to understand the various effects of space - geographic, temporal, and psychological between educators and learners. ICT offers tremendous potential that influences education. It therefore becomes paramount for educators to reflect upon many issues. Firstly, what is the desired outcome of a program of teaching and learning?; How would critical thinking be embodied in the program of teaching and learning?; What would sustain learners’ quest for continued education?; What teaching styles would emulate critical thinking?; and finally how new knowledge would be generated and purveyed? Intertwined among these challenges is how to meet the expectations and needs of employers and employees in this new environment.

In this regard an inventory of teaching and learning documented in the form of a portfolio becomes essential. Such an inventory of teaching and learning should demonstrate the learners’ knowledge in a particular discipline. Creativity of thought and reading beyond the subject is also enhanced and learners can contribute to an electronic discussion board. These discussion boards become a form of social networking where thoughts are challenged and knowledge is shared.

## 10. Conclusion

In conclusion, the question of whether universities will be necessary in the future has never been asked because it has never been a possible question before. The study commenced with two questions: What does one do when a “net generation” of computer literate and

computer sophisticated students arrive at the gates of institutions? What is the commensurate ability of faculty? Until the rise of the World Wide Web there was no alternative to university education. As a result, educators are faced with a rich array of opportunities and at the same time hazards. The simple fact that it is now possible to ask the question mandates a discussion. It is difficult to predict the future. In the short run, e-Learning represents a threat to traditional institutions. The faculties of these institutions are obliged to take advantage of the technology toward two ends. First, they must use this most powerful intellectual tool to free them from classroom drudgeries and shifting from one traditional technology to other non traditional and time saving devices where studies is less and less boring encouraging creative, enriching, and exciting thoughts. Corporations are run with more intelligence (and information) than ever before and they need intelligent, creative employees more than ever before. Universities can and should respond to this need. A need still exists for intelligent citizens who lead examined lives, who make informed choices and conduct themselves intelligently at all times. Educators need to be aware of student motivation when teaching an online class. Student motivation is even more difficult to assess online, especially with the lack of face to face contact. Strategies were identified in the study to engage the students and keep them interested. Most importantly, be aware that more technology does not lead to better learning and finally facilities are important but facilitators become paramount in e-learning.

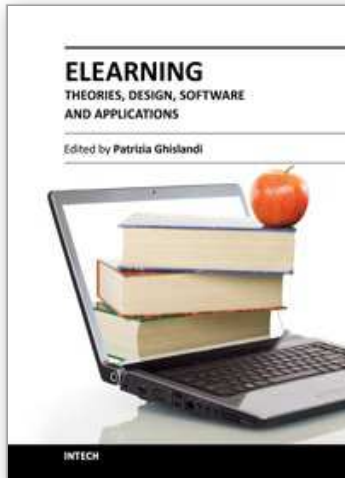
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The term was coined when electronics, with the personal computer, was very popular and internet was still at its dawn. It is a very successful term, by now firmly in schools, universities, and SMEs education and training. Just to give an example 3.5 millions of students were engaged in some online courses in higher education institutions in 2006 in the USA<sup>1</sup>. eLearning today refers to the use of the network technologies to design, deliver, select, manage and broaden learning and the possibilities made available by internet to offer to the users synchronous and asynchronous learning, so that they can access the courses content anytime and wherever there is an internet connection.

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