E-LEARNING:  
A PRACTICAL APPROACH TO MODERN DAY LEARNING PROCESS

ESEN, ITORO NATHAN  
Department of Computer Science  
Akwa Ibom State Polytechnic, Ikot Osuru 
Ikot Ekpene, Akwa Ibom State, Nigeria

Abstract  
This paper on “E-Learning (Electronic Learning System)” is considered based on its concept and its applications. Ever since the evolution of the internet and computer system, organizations prefer electronic systems to traditional or manual systems. This is because electronic systems proffer speed and save time. More importantly, the barrier of distance is broken. E-learning has made it possible for people to learn electronically over the internet, this implies that no matter the location of the individual, learning can still be achieved. E-learning is a broad term but this paper gives an overview of the concept by clearly defining electronic learning, the history of e-learning, the e-learning market (major users), the e-learning process, approaches to e-learning, e-learning systems, e-learning and distant education. Finally, merits and demerits of using E-Learning system are also examined.

INTRODUCTION  
The age of computers has brought with it dynamic changes in the way so many tasks are executed. Everybody is moving towards using electronic or online system to facilitate their operations. For instance, an institution or any learning body may want people located in different regions or countries to still be students of their institution from wherever they are. Of course, lectures will be held electronically following a time-table! This is amazing; One can be in Nigeria and have a Masters Degree from the University of Liverpool without even traveling to Liverpool. Examinations will also be conducted online, Certificates will also be sent electronically to successful students. This significant development is wrapped up in one phrase “Electronic Learning”. The evolution of e-learning has brought about other terms such as virtual classroom, virtual school, virtual education etc. however, the term e-learning does not just mean learning over the internet. It also includes the use of electronic media such as DVD, CD-ROM etcetera to communicate knowledge.

Nowadays, it is commonly thought that new technologies can strongly help in education. In young ages especially, children can use the huge interactivity of new media, and develop their skills, knowledge, perception of the world, under their parents monitoring, of course. In no way traditional education can be replaced, but in this era of fast technological advancement and minimization of distance through the use of the Internet, everyone must be equipped with basic knowledge in technology, as well as use it as a medium to achieve a particular goal.

According to Tavangarian et al (2004), E-learning includes 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. The term will still most likely be utilized to reference out-of-classroom and in-classroom educational experiences via technology, even as advances continue in regard to devices and curriculum.

E-learning is the computer and network-enabled transfer of skills and knowledge. E-learning applications and processes include Web-based learning, computer-based learning, virtual education opportunities and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM. It can be self-paced or instructor-led and includes media in the form of text, image, animation, streaming video and audio.

HISTORY OF E-LEARNING
In the early 1960s, Stanford University Psychology professors Patrick Suppes and Richard C. Atkinson experimented with using computers to teach MATHEMATICS and reading to young children in elementary schools in East Palo Alto, California. Stanford’s Education Program for Gifted Youth descends...
from those early experiments. In 1963, Bernard Luskin installed the first computer in a community college for instruction, working with Stanford and others, developed computer assisted instruction. Luskin completed his landmark UCLA dissertation working with the Rand Corporation in analyzing obstacles to computer assisted instruction in 1970.

Early e-learning systems, based on Computer-Based Learning/Training often attempted to replicate autocratic teaching styles whereby the role of the e-learning system was assumed to be for transferring knowledge, as opposed to systems developed later based on Computer Supported Collaborative Learning (CSCCL), which encouraged the shared development of knowledge.

As early as 1993, William D. Graziadei described an online computer-delivered lecture, tutorial and assessment project using electronic mail. By 1994, the first online high school had been founded. In 1997 Graziadei, W.D., et al. published an article entitled "Building Asynchronous and Synchronous Teaching-Learning Environments: Exploring a Course/Classroom Management System Solution". They described a process at the State University of New York (SUNY) of evaluating products and developing an overall strategy for technology-based course development and management in teaching-learning. The product(s) had to be easy to use and maintain, portable, replicable, scalable, and immediately affordable, and they had to have a high probability of success with long-term cost-effectiveness. Today many technologies can be, and are, used in e-learning, from blogs to collaborative software, ePortfolios, and virtual classrooms. Most E-Learning situations use combinations of these techniques.

E-LEARNING MARKET (MAJOR USERS)
The worldwide e-learning industry is estimated to worth over $48 billion according to conservative estimates. Developments in internet and multimedia technologies are the basic enabler of e-learning, with consulting, content, technologies, services and support being identified as the five key sectors of the e-learning industry. Nagy, A. (2005)

HIGHER EDUCATIONS
Many higher educations, now offer on-line classes. By contrast, only about half of private, non-profit schools offer them. Private institutions may become more involved with on-line presentations as the cost of instituting such a system decreases. Properly trained staff must also be hired to work with students online. These staff members need to understand the content area, and also be highly trained in the use of the computer and Internet. Online education is rapidly increasing, and online doctoral programs have even developed at leading research universities. Hebert, (2007).

CORPORATE ESTABLISHMENTS
E-Learning has now been adopted and used by various companies to inform & educate both their employees and customers. Companies with large and spread out distribution chains use it to educate their sales staff as to the latest product development without the need of organizing physical courses. Compliance has also been a big field of growth with banks using it to keep their staff’s professional development level up.

THE E-LEARNING PROCESSES
Like any learning process, e-learning depends on effective communication of human knowledge, whether this occurs in a face-to-face classroom or across the Internet. The medium alone does not create the message. The effectiveness of e-learning also depends on establishing two-way communication between teachers and learners, and among learners themselves. Unfortunately, when e-learning was first popularized, it was widely promoted as a means of minimizing costs by delivering pre-packaged content to large populations of learners by means of electronic networks or CD-ROMs. Such an approach relies on one-way communication from teacher to learner, attenuating the learning experience. It views learners as atomised individuals and fails to take into account the social context in which learning occurs. Above all, it does not engage learners actively in the process of learning. On the other hand, online technologies can also be used to foster interactive and collaborative engagement. This can be either synchronous or asynchronous: learners and instructors may either have regular, scheduled sessions whether they all ‘meet’ simultaneously online, or (more commonly) use electronic form to exchange ideas in their own time. The most familiar form of synchronous electronic communication is real-time two way text-based online chat, which is widely used in e-learning. More sophisticated forms of synchronous instruction include virtual classrooms, which use information and communication technologies to mimic a traditional classroom.
environment. This may involve video-conferencing or the use of shared electronic whiteboards, which allow learning materials to be created and modified in real time, either by the instructor or the learners.

The use of virtual classrooms has considerable cost advantages for many organisations. The logistics of organising face-to-face classroom training can account for as much as 40 per cent of corporate training budgets. On the other hand, virtual classrooms have several drawbacks. They require learners to have access to fast, reliable networks and reasonably sophisticated computing facilities. Learning in a virtual classroom also tends to be instructor-led rather than based on participatory, two-way of the conventional classroom in that they require learners to be online at a particular time. This negates one of the major advantages of electronic communication, which is its ability to offer flexible access.

By contrast, asynchronous instruction allows participants to control their own timetables and fit learning around their other commitments. This is a major bonus, especially for adult learners. Many of the technologies used in asynchronous e-learning also permit two-way communication between learners and instructors, or multi-directional, collaborative communication among learners themselves. These are some of the communication technologies most commonly used in asynchronous e-learning:

• Email is the most common form of electronic information exchange.
• Collaborative learning fora promote learner interaction through message boards, where students can post questions and answers; text chat or fora, where learners can communicate outside the main classroom; and exchange discussions, where facilitators and students can discuss a given topic and review each other’s responses.
• E-boards allow learners and instructors to create images, text and information and present them to other participants.
• Application sharing allows instructors and learners to work collaboratively on the same learning materials, either simultaneously or in sequence. Participants can see what is happening at all times.
• Simulations or virtual laboratories permit learners to work in teams to construct projects and complete them at their preferred pace.
• Library/learning session cache access provides access to archived text, presentations, video, audio and data files. This is especially useful for revision or for reviewing synchronous learning sessions a student may have missed.
• Real-time tests and evaluation can be triggered at agreed times or completed at the learner’s own pace.
• Video and audio streaming can be used to disseminate information to learners, and can also enable learners to see and speak with the facilitator via the Internet rather than by telephone.

From the instructor’s point of view, e-learning also offers classroom management technologies that permit instructors to log students into ‘classes’, establish work groups, manage interaction between students and receive feedback in real time.

APPROACHES TO E-LEARNING
The following are the approaches to e-learning:

COMPUTER-BASED LEARNING
Computer-based learning, sometimes abbreviated as CBL, refers to the use of computers as a key component of the educational environment. While this can refer to the use of computers in a classroom, the term more broadly refers to a structured environment in which computers are used for teaching purposes. According to Cassandra B. Whyte, 1989, who researched about the ever increasing role that computers would play in higher education, this evolution, to include computer-supported collaborative learning, in addition to data management, has been realized. The type of computers has changed over the years from cumbersome, slow devices taking up much space in the classroom, home, and office to laptops and handheld devices that are more portable in form and size and this miniaturization of technology devices will continue.

COMPUTER-BASED TRAINING
Computer-based trainings (CBTs) are self-paced learning activities accessible via a computer or handheld device. CBTs typically present content in a linear fashion, much like reading an online book or manual. For this reason they are often used to teach static processes, such as using software or completing mathematical equations. The term Computer-Based Training is often used interchangeably with Web-based training (WBT) with the primary difference being the delivery method. Where CBTs are typically
delivered via CD-ROM, WBTs are delivered via the Internet using a web browser. Assessing learning in a CBT usually comes in form of multiple choice questions, or other assessments that can be easily scored by a computer such as drag-and-drop, radio button, simulation or other interactive means. Assessments are easily scored and recorded via online software, providing immediate end-user feedback and completion status. Users are often able to print completion records in the form of certificates.

CBTs provide learning stimulus beyond traditional learning methodology from textbook, manual, or classroom-based instruction. For example, CBTs offer user-friendly solutions for satisfying continuing education requirements. Instead of limiting students to attending courses or reading printed manuals, students are able to acquire knowledge and skills through methods that are much more conducive to individual learning preferences. For example, CBTs offer visual learning benefits through animation or video, not typically offered by any other means. CBTs can be a good alternative to printed learning materials since rich media, including videos or animations, can easily be embedded to enhance the learning. Another advantage of CBTs is that they can be easily distributed to a wide audience at a relatively low cost once the initial development is completed. However, CBTs pose some learning challenges as well. Typically the creation of effective CBTs requires enormous resources. The software for developing CBTs (such as Flash or Adobe Director) is often more complex than a subject matter expert or teacher is able to use. In addition, the lack of human interaction can limit both the type of content that can be presented as well as the type of assessment that can be performed. Many learning organizations are beginning to use smaller CBT/WBT activities as part of a broader online learning program which may include online discussion or other interactive elements.

**COMPUTER-SUPPORTED COLLABORATIVE LEARNING (CSCL)**

Computer-supported collaborative learning (CSCL) is one of the most promising innovations to improve teaching and learning with the help of modern information and communication technology. Most recent developments in CSCL have been called E-Learning 2.0, but the concept of collaborative or group learning whereby instructional methods are designed to encourage or require students to work together on learning tasks has existed much longer. Blogs, wikis, and Google Docs are commonly used CSCL mediums within the teaching community. The ability to share information in an environment that is becoming easier for the lay person, has caused a major increase of use in the average classroom. One of the main reasons for its usage states that it is "a breeding ground for creative and engaging educational endeavors." Crane,2009. Using Web 2.0 social tools in the classroom allows students and teachers to work collaboratively, discuss ideas, and share information. According to Sendall (2008), blogs, wikis, and social networking skills are found to be significantly useful in the classroom. After initial instruction on using the tools, students also reported an increase in knowledge and comfort level for using Web 2.0 tools. The collaborative tools additionally prepare students with technology skills necessary in today's workforce.

**TECHNOLOGY-ENHANCED LEARNING (TEL)**

Technology enhanced learning (TEL) has the goal to provide socio-technical innovations (also improving efficiency and cost effectiveness) for e-learning practices, regarding individuals and organizations, independent of time, place and pace. The field of TEL therefore applies to the support of any learning activity through technology.

**E-LEARNING SYSTEMS**

Several application technologies and systems have emerged as a result of E-learning. Stated below are some of the systems that make E-learning interesting and useful;

**LEARNING MANAGEMENT SYSTEM (LMS) AND LEARNING CONTENT MANAGEMENT SYSTEM (LCMS)**

Learning Management System (LMS) is software used for delivering, tracking and managing training/education. LMSs range from systems for managing training/educational records to software for distributing courses over the Internet and offering features for online collaboration.

Learning Content Management System (LCMS) is software for author content (courses, reusable content objects). An LCMS may be solely dedicated to producing and publishing content that is hosted on an LMS, or it can host the content itself. LMS allows for teachers and administrators to track attendance, time on task, and student progress. LMS also allows for not only teachers and administrators to track these variables but parents and students as well. Parents can log on to the LMS to track grades. Students log on to the LMS to submit homework and to access the course syllabus and lessons.
COMPUTER-AIDED ASSESSMENT SYSTEM
Computer-aided Assessment (also but less commonly referred to as E-assessment), ranging from automated multiple-choice tests to more sophisticated systems is becoming increasingly common. With some systems, feedback can be geared towards a student's specific mistakes or the computer can navigate the student through a series of questions adapting to what the student appears to have learned or not learned. The best examples follow a Formative Assessment structure and are called "Online Formative Assessment". This involves making an initial formative assessment by selecting the incorrect answers. The author/teacher will then explain what the pupil should have done with each question. It will then give the pupil at least one practice at each slight variation of selected questions. This is the formative learning stage. The next stage is to make a Summative Assessment by a new set of questions only covering the topics previously taught.

ELECTRONIC PERFORMANCE SUPPORT SYSTEMS (EPSS)
Electronic performance support systems (EPSS) is a "computer-based system that improves worker productivity by providing on-the-job access to integrated information, advice, and learning experiences". 1991, Barry Raybould

E-LEARNING, DISTANCE EDUCATION AND FLEXIBLE LEARNING
E-learning has historically been linked with distance education and flexible learning. In distance education, various technologies can be used to link learners, instructors and resources that are removed in time or space. The hallmark of flexible learning, as its name suggests, is its adaptability to learners’ needs and circumstances. Burns, Williams and Barnett define flexible learning in terms of its flexible ‘entry, course components, modes of learning and points of exit’, which offer the learner ‘control and choice regarding the content, sequence, time, place and method of learning’, including flexible assessment processes. While e-learning may be seen as a form of flexible and distance learning, not all flexible and distance learning necessarily involves e-learning.

Advantages and Disadvantages of e-Learning
There are many advantages to online and computer-based learning when compared to traditional face-to-face courses and lectures. There are a few disadvantages as well.

Advantages of online or computer-based learning
- Class work can be scheduled around work and family
- Reduces travel time and travel costs for off-campus students
- Students may have the option to select learning materials that meets their level of knowledge and interest
- Students can study anywhere they have access to a computer and Internet connection
- Self-paced learning modules allow students to work at their own pace
- Flexibility to join discussions in the bulletin board threaded discussion areas at any hour, or visit with classmates and instructors remotely in chat rooms
- Instructors and students both report e-Learning fosters more interaction among students and instructors than in large lecture courses
- e-Learning can accommodate different learning styles and facilitate learning through a variety of activities
- Develops knowledge of the Internet and computers skills that will help learners throughout their lives and careers
- Successfully completing online or computer-based courses builds self-knowledge and self-confidence and encourages students to take responsibility for their learning
- Learners can test out of or skim over materials already mastered and concentrate efforts in mastering areas containing new information and/or skills

Disadvantages of online or computer-based learning
- Learners with low motivation or bad study habits may fall behind
- Without the routine structures of a traditional class, students may get lost or confused about course activities and deadlines
- Students may feel isolated from the instructor and classmates
Instructor may not always be available when students are studying or need help
Slow Internet connections or older computers may make accessing course materials frustrating
Managing computer files and online learning software can sometimes seem complex for students with beginner-level computer skills
Hands-on or lab work is difficult to simulate in a virtual classroom
http://www.dso.iastate.edu/asc/academic/elearner/advantage.html

SUMMARY
E-learning is the computer and network-enabled transfer of skills and knowledge. E-learning applications and processes include Web-based learning, computer-based learning, virtual education opportunities and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM. It can be self-paced or instructor-led and includes media in the form of text, image, animation, streaming video and audio. E-learning systems such as Learning Management System (LMS), Learning Content Management System (LCMS) and Computer Aided Assessment (CAA) facilitate the e-learning process. E-learning promotes distant learning and also makes it flexible.

CONCLUSION
Electronic learning is a positive development. It facilitates learning, breaks the barrier of distance and makes individuals to have access to information to better their lives. Studying abroad can be done right from a computer on a desk. Institutions and organizations should therefore utilize electronic learning for trainings as it will save time and enhance productivity.

REFERENCES
Crane, Beverley E. "Using Web 2.0 Tools in the k-12 Classroom" Neal- Shuman Publishers Inc., 2009. p.3
Sendall, P; Ceccucci, W., & Peslak, A. (December 2008). "Web 2.0 Matters: And Analysis of Implementing Web 2.0 in the Classroom". Information Systems Education Journal 6 (64).
Retrieved 04/12/12.