Design and Implementation of a Web-Based E-Learning in Zambia For Primary and Secondary Schools: A Case Study of Selected Urban and Rural Schools in Solwezi District
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ABSTRACT

A new technology platform for the education system is creating with the development of information technology. Web-based training platforms enable teachers to plan lessons and develop easy to use digital resources to put assessments and tasks and automatically monitor the progress of every student or the entire class. The specific objectives of the study were as follow: to determine the effect of peer interaction on academic performance and analyse the effect of a web-based e-learning in Zambia for primary and secondary schools. The survey questionnaire was administered to pupils in slowest district. Data was analysed using descriptive statistics with the aid of the statistical package. The piloted data was analysed to calculate its reliability and special attention was given to relevance of survey questionnaire and clarity of instructions for this research. Results of the study showed that pupils have access to E-learning and their exposure to a great extent. The study revealed that majority of the respondents had mobile phones which had internet facility on them to access the on line lessons and had knowledge of the existence of a web-based e learning using phones and spent between thirty minutes to three hours per day. In addition, the study revealed that the use of e-learning had affected academic performance of the pupils negatively and that there was direct relationship between the use of new technology and the performance. The study recommends that students with mobile phones having internet facility should be encouraged to use it to supplement their learning rather than sitting in class always and wait for teachers to teach them. Students should be encouraged to limit the time they spend in class with their teachers per day and advise them to substitute those hours to read and learn using E-Learning-Learning option allows students to learn the course without moving out of their place where as they have to compulsorily attend the traditional classrooms for learning in the classroom learning option. Web based learning offers huge opportunities for learning and access to a vast amount of knowledge and information. Web based learning should not always be viewed as the method of choice because barriers such as inadequate equipment can easily distract the student learning. The technology must therefore be applied appropriately and not used simply because it is available and new. Hence both teachers and pupils have particular expectations of this means of course delivery.

Keywords— Computer Based Training (CBT), Internet-Based Training (IBT), Web-Based Instruction (WBI), Advanced Distributed Learning(ADL), Distributed Learning (DL), Distance Learning, Online Learning (OL), Mobile Learning (Or M-Learning) Or Remote Learning And Learning Management Systems (LMS).

CHAPTER ONE: INTRODUCTION TO THE RESEARCH

1.0.   INTRODUCTION

Education is a key factor for sustainable development (Chimombo 2005). The significance of education, especially in developing countries, is increasing because of progressing pressure to catch up with the developed world regarding, for example, global competitiveness (Hawkins 2002). Predictably, educational settings are different in developing countries than in developed countries, such as low quality of education and narrow possibilities in attending schools in rural areas because of far distances and high opportunity costs (Ibid 2005). Chimombo, 2005 opines that country-specific circumstances have to be improved regarding compulsory and free education to foster general access to education. In Article 26 of the 1948 UN universal declaration of human rights the right of obligatory and free education for everyone is already committed (UN Human Rights 1948).

Every year, more of the world's people become connected to the network, its bandwidth increases and its use becomes more integrated to all that happens in the globe. Connectivity to this network has becomes key to opportunity, success and fulfillment for individuals. Kenya has defined a national ICT policy with a view of creating an e-enabled and knowledge-based society by the year 2015. Just like the technology has changed the world, it is now changing the learning and teaching environment.

A broad range of learning approaches exists already, for example, e-learning, blended learning (Maier, 2007), and distance learning which utilize information and communication technology (ICT). The use of ICT can benefit, for example, students in rural areas by having them attend classes as distance learners and motivating them to learn like the "Group Learning Sets" (GLS) initiative offers. Regarding this, the potential of e-learning seems very assuring, but because of gaps between developed and developing countries knowledge transfer is not only difficult but also costly.

E-learning denotes the use of ICT by teachers and learners. Schmidt 2005 holds that e-learning consists of conventional training, such as courses, ad-hoc training, selected learning objects, formalization through document collections and community formation which can be achieved via social software.

According to case studies, there are already a number of e-learning programs offered in developing countries (Kohn et al. 2008). These programs are developed by various national and international initiatives, for example, the group learning sets initiated by Computer Aid International in collaboration with Kenyatta University. The growth of e-learning programs according to Lockwood and Gooley, 2002 is driven by the need for and potential of providing education in less expensive ways, increased access to information, effective learning and greater flexibility.

Stephenson, 2001 posits that there is little systematic research into the overall effectiveness of e-learning as a learning medium despite the great interest in it. He acknowledges that while there is much more work to be done, a variety of e-learning courses aimed at making sustainable development a reality has been developed and demonstrate how e-learning can reach thousands if not millions of minds and potentially plant the seeds of change.

1.1.   ELECTRONIC LEARNING (E-LEARNING)
1.2.

Fry 2000 and Wild et al. 2002 describe E-learning as the delivery of training and education via networked interactivity and distribution technologies. Other authors notably Roffe, 2002; Schank, 2002; and Sambrook, 2003 see e-learning simply as learning and communication exercises

across computers and networks or for that matter any other electronic sources.

Khan (2005) pointed that E-learning has been described in various ways as learning using a number of different technologies and methods for delivery e.g. Computer Based Training (CBT), Internet-Based Training (Ibt), Web-Based Instruction (WBI), Advanced Distributed Learning(ADL), Distributed Learning (Dl), Distance Learning, Online Learning (OL), Mobile Learning (Or M-Learning) Or Remote Learning And Learning Management Systems (LMS).

In the 70s and 80s distance learning became popular and was done via mail until the rise of Internet usage. In late 90s the digital learning environment was heightened and World Wide Web started as a distributed learning mechanism to support on campus student and distance learners. With the use of this delivery technology learners can get a range of resources like discussion forums, multimedia, chat, video conferencing and electronic black boards (Gulatee and Combes, 2007).

In E-learning system, students are able to interact anytime from wherever with different instructional material (text, sound, pictures, video and so on) through Internet. In addition, learners can communicate with teachers and classmates both individually and as a group discussion with the use of message boards, instant message exchanges and video conferencing (Al-Ammari and Hamad, 2008).

Khan 2005 suggests that e-learning system is used for an open, flexible, and diverse E-learning environment. Moreover E-learning system can be analyzed as an inventive approach for delivering, learner-centered, interactive, and facilitated learning environment to anyplace, anyone, anytime by utilizing the features and resources of different digital technologies along with other types of learning materials suited for an open, distributed, and flexible learning environment (Ibid, 2008).

1.3. Group Learning Sets

Computer Aid provided over 1,500 PCs to Kenyatta University. Many of these computers are being used for the university's cutting-edge e-learning project, which is enabling rural students to pursue university courses remotely. Kenyatta University has made its courses accessible to people living and working in those communities. In particular, the university is targeting people who are already engaged in work that is vital to the social and economic development of rural and marginalised areas. These 'key workers' include nurses, teachers, entrepreneurs and agricultural advisors. The University is encouraging students to study together and benefit from each other. In order to facilitate this collaborative learning, the University through the help from Computer Aid further put in place mechanism of providing students with computers. Students are encouraged to form small learning groups of five or six students called Group Learning Sets (GLS).

After new curriculum has been implemented, High School Information Technology Course, as one of the subjects of college entrance examination, draws increasing attentions from all sectors of the society. And it becomes a significant project to investigate the high efficiency of teaching. However, there are two salient defects for the present High School Information Technology Course as follows:

1. For the conventional information technology assisted teaching, "task-driven approach" is frequently adopted, which is monotonous, unidirectional and fixed. Students could not be motivated, and their learning efficiency is not high enough.

2. The present network teaching lacks convenient and effective supporting modules for teaching management platform. Moreover, the network supporting modules lack integration. Some existing modules like user registration system, BBS, chatting room, online testing, etc. are all separated and isolated systems form the teaching

content of High School Information Technology Course. Therefore, students' learning outcomes could not be multi-evaluated.

At present, many teaching administrators and IT teachers are elaborated in developing or searching for an effective network teaching management platform to teach the High School Information Technology Course. However, due to their high price or complex programming techniques, some famous network platforms like web CT, Blackboard, ATA, etc. become inaccessible for information technology teachers. Conversely, for the characteristics of free of charge, educational idea for design and open source, Moodle becomes the preferred network platform for the IT teaching in elementary and secondary schools. To cope with the problems in high school information technology teaching, the course "Basis for Information Technology" is taken as an example. A teaching platform for high school information technology course is designed with Moodle platform, and the system is operated, tested and put into practice as well.

Through analyzing the problems, the high school information technology encounters and its actual needs, and according to the understanding of Moodle platform, this essay aims to construct a network teaching platform with Moodle to have a multi-evaluation on students' learning outcomes.

There are different expressions used to describe educational computer applications which help the students can access courses' contents in different formats (text, image, sound), as well as interact with teachers and/or colleagues, via message boards, forums, chats, video-conference or other types of communication tools. These platforms provide a set of configurable features, in order to allow the creation of online courses, pages of subjects, work groups and learning communities. Therefore, firstly this assignment defines Moodle and discusses its importance. Secondly, the assignment defines educational technology and finally the discussion continues on how internet software successfully

supports social constructionist epistemologies of teaching and learning. In addition to the pedagogical dimension, these systems have a set of features for registering, monitoring and evaluation activities of students and teachers, enabling the contents' management via Internet.

Moodle which is Modular Object-Oriented Dynamic Learning Environment can be defined as a large, Web-based software package that enables instructors, trainers, and educators to create Internet-based courses, Hannafin and Land (2000). In the same development e-learning platform is one of the components that are very important for the delivery of content to a learner. There are different e-learning platforms including learning management systems (LMS), course management system (CMS), virtual learning environment (VLE) Campanella, S. et al (2017). Some examples of LMS such as Moodle Coates H, R et al (2005) provide many capabilities like the interaction between teacher and students, feedback, conversation, and networking, etc.

Moodle represents one of the most widely used open-source e-learning platforms that enable the creation of a course website ensuring their access only to enrolled students. This platform allows the exchange of information among users geographically dispersed, through mechanisms of synchronous (chats) and communication or discussion forums. In a functional perspective, it has easily configurable features, allowing the creation of student assessment processes (quizzes, online tests and surveys), as well as managing their tasks with their timetable, besides offering a wide variety of complementary tools.

One of the greatest advantages in sticking with Moodle is that developers have kept the look and feel consistent over the years, and they have to continue to keep it consistent so that each upgrade doesn't feel like it's a piece of new software.

On Moodle, resources represent instructional materials that are usually created in digital formats and then uploaded to the platform. Web pages,

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PowerPoint files, word documents, flash animations, video and audio files represent some examples of these resources. Modules are components created via Moodle in order to provide interaction among students and teachers towards manipulation and content transformation to support them Moodle (2017).

However, educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources. The research in educational technology has grown from investigations attempting to "prove" that media and technology are effective tools for learning, to investigations created to describe and detail the appropriate applications of processes and technologies to the improvement of learning. Important to the newest research in educational technology are the use of authentic environments and the voice of practitioners as well as researchers.

The term technology comes from the Greek word *techné*, which was defined by the Greeks as a particular activity or kind of knowledge (Saettler, 1990). So, in the Greek tradition techné could be a physical device such as a computer or a video camera, but it could also be a type of knowledge, such as Gardner's multiple intelligences (Smith, 2005). Society today defines technology much more narrowly. Technology today is most often used today to mean a device. In Education today most people think of technology almost exclusively as the computer. But technology could be any tool that can be used to help promote human learning including video cameras, digital cameras, MP3 players, Portable Digital Assistants, and, of course, the computer. But in the field of Educational Technology we embrace the original meaning.

1.4. MOTIVATION AND SIGNIFICANCE OF THE STUDY

Using mobile technology, the classroom can be taken anywhere. With all the knowledge and resources contained and deliverable on demand on a mobile device, students can learn at home or in the "field". Mobile technology allows for greater collaboration between students promoting strong foundations in group work, Moura A, A. A& Carvalho (2009).

Technology helps to track and reports student's progress instantly which gives feedback and provides instant motivation to improve performance. Similarly, students who use technology are motivated to improve performance just like they do at home on their gaming consoles. Trying to beat high scores at home and trying to beat high scores in math use the same psychology. At the same time, the paradigms of obtaining knowledge are changing also: lifelong learning becoming the dominant pattern, the conceptual difference between child and adult diminishes and formal scholar institutions have turned into open virtual environments. Printed material loses its place in communication mediums and virtual learning will become familiar. Nyíri (2003)

This runs along the same lines as motivation. Creating a social element to educational technology can allow for healthy competition amongst peers both in the same classroom and across the country brings out motivation. Performing well and earning badges to gain virtual social status is at the heart of many social applications today. Personal identities do not have to be used; instead, students could use avatars to hide possible confidentiality breaches. Using technology to make education have social elements can make learning very addictive.

The present study has great Significance. First of all, the study findings provide an idea about the e-learning aspects and academic performance in order to provide key information to further research work in such areas. In the same way, the study provides

knowledge and guidelines to that may be of help to policymakers. The research is therefore of importance for planners, and other social scientists. Finally, this study provides an input to the students, teachers and researchers in the areas of e-learning. Research works are embarked upon with a view to extending the frontier of knowledge. The present study was therefore carried out with this same objective, especially in the field of e-learning. It has therefore, contributed to the extension of the frontier of knowledge in the following ways. First, the study has shown the predictive power of the selected factors, especially socio-demographic factors, prior computer skills and time management status in the determination of the academic performance.

The study examines how the learners structure their activities and what their effective attitude and cognitive perceptions are towards online learning in general. The results and the discussion set out in this study, have some important implications for teachers and instructional designers. The study is expected to contribute to an understanding of online learning and provides a basis for empirical study of learners performing real educational tasks. The insights gained in this small-scale study will help teachers construct better online learning environments with regard to pedagogy and technological innovation.

1.5. PROBLEM STATEMENT

The importance of education is increasing because of increasing pressure to catch up with the developed world regarding, for example, global competitiveness (Hawkins 2002). Before the introduction of e-learning many people, who wanted to obtain university degree had to compete for the few places that were offered by the public universities. Those offered places had to apply for study leave as they had to go through the traditional learning system. This kind of further education system was characterized by limited number of students that could be absorbed per an academic year and consequent removal from their places of work for the duration of their study.

From the reviewed literature, it can be deduced that there seems to be no research studies on the joint contributions of e-learners' socio-demographic, hours spent online/offline and prior computer skills variables to their academic performance. Whereas, researchers and theorists (Coldeway, 1986; Calvert, 1986; Garrison, 1987; Kumar, 2001) have stressed the need for a comprehensive approach, taking into account all the experiences of e-learners as well as the unique aspects of e-learning environment. In addition, it has also been observed that little research has been devoted to exploring factors that predict the academic performance of e-learners (Cookson, 1989) while those that even exist concentrated largely on demographic correlates as a component in their studies (Kumar, 2001).

Several studies have been carried out on academic performance especially on conventional students, but not much on e-learning students within the Kenyan educational system. The need to sever this ground so as to extend the frontier of knowledge in order to help improve the unimpressive e-learners' academic performance necessitates and serves as the motivating factor for undertaking the present piece of research so as to fill the existing important research gap.

Inherent in the word "research" is the iterative process it encompasses. Research seeks to resolve problems by investigating solutions, and those attempts lead to new practice and therefore new problems and questions. Certainly, the ideas of reflective practice and inquiry based upon authentic settings are valuable perspectives on research. Reflective practitioners consider the problems in their environment (for example, a learning problem of their students) and attempt to resolve the problems by changes in practice, based upon both research results and professional experience. Reflection on this process leads to changes in the considered solution and further attempts to identify and solve problems in the environment, a cyclical

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process of practice/reflection that can lead to improved practice. Oliver, M (2002)

Teaching about the computer used to be defined as "computer literacy," a term that means that people know how the computer works and how to perform some troubleshooting and maintenance tasks. Computer literacy may not be as important today as it once was. Many students seem to come to school with an excellent set of technology skills (CNN,2005). For others Educational Technology may mean an Integrated Learning System (ILS). These systems provide basic instructions and a type of assessment for students. Students will log in with a username and password and work through modules in a variety of subjects from math to music. There will be quizzes and tests for the students to take, and the system can track the performance of the learner to help give the teacher a picture of how well a student is doing as alluded earlier.

While there are advantages to the use of integrated learning system, they are often seen as a blanket solution to the issue of using technology in the classroom. But too often they are not used in the classroom. Students go to the computer lab and work. In many schools the teacher does not go to the computer lab while students work on an ILS. So, if you are asking the question "how best to integrate technology into teaching and learning," ILS may not be the best answer. For others Educational Technology means integrating technology into teaching and learning, or, as it often called, technology integration.

2.0.   AIM OF STUDY

One of the aims of this study is to find out which concept is lacking for each specific student and to give him/her a chance to the students to repeat the same concept without taking up the school time.

3.0.   OBJECTIVES
3.1.GENERAL OBJECTIVES

The purpose of this study was to Design and Implementation of a Web-Based E Learning in Zambian Primary and Secondary Schools.

3.2.SPECIFIC OBJECTIVES

The following are the objectives of this study:

1.   To examine the challenges of teaching and learning on Web-Based E Learning in Zambian Primary and Secondary Schools.
2.   To come up with ideas and suggestions on how to improve the record of Students progress.
3.   To develop an application that deals with the day to day requirement of any teacher or student.

4.0.   RESEARCH QUESTIONS

The study was guided by the following questions:

1.   What are the challenges of teaching and learning on Web-Based E Learning in Zambian Primary and Secondary Schools?
2.   How could the performance of Students be improved?
3.   What applications can be deals with the day to day requirement of any teacher or student?

5.0.   ORGANIZATION OF THE THESIS

This study was organized as follows: chapter one presented the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, and significance of the study, theoretical framework, operational definitions and delimitation of the study.

In chapter two, related literature is reviewed. This chapter is structured as follows: Teaching, lesson planning and preparation, lesson presentation, designing and implementation.

Chapter three outlines the research methodology as follows: research design, research sites, target population, sample and sampling procedures, research instruments, data collection procedures, data analysis, ethical issues and limitations of the study.

In chapter four the findings of this study are presented according to research questions. The discussions of the findings are presented in chapter

five. In chapter six, conclusions are drawn from the results and recommendations are given. In addition to the main text, there are appendices.

6.0.   SUMMARY

Blogs provide an environment that potentially supports an active process of thinking and learning Paulsen M, (2003). They allow interactivity and, through the expression and discussion of individual ideas, a forum for learning, Cole J.H, Foster (2017). They can provide a record of conversation and evidence of collaboration that can be used by group members as a basis for thoughtful dialogue Coates H. R et al (2005) allowing the development of common meaning to be constructed from multiple perspectives (Marshall, 1995). The interaction can be between the learners and the teachers and also the internet users can be involved in the interactions online.

In the same development, the object of educational technology is cast as "facilitating learning," a claim more modest than that of controlling or causing learning. Meanwhile it is intentional that learning is placed at the centre of the definition, to highlight the centrality of learning to educational technology. It is the goal of promoting learning that is distinctive about the field, compared to other fields with which it might be conflated, such as information technology or performance technology Oliver, M (2002).   There is "improving performance" implies a quality criterion, a goal of facilitating learning better than is done with approaches other than Educational Technology, leading to usable skills, not just inert knowledge. And finally, it describes the major functions of the field (creation, use, and management) in broader, less technical terms than previous definitions in order to reflect an eclectic view of the design process.

Educational Technology is a field of study; much like history or literature is a field of study. Researchers and practitioners in the field of Educational Technology may specialize in particular areas, such as corporate training in education, or Internet based learning, much like in e-learning. But as with most fields, the field of Educational Technology holds some commonly held beliefs. The most important one is that Technology is defined broadly. Definition of technology to mean not only devices (we do love things that plug in), but also processes and strategies as well and to illustrate this point we offer up the classic Educational technology questions, Piotrowski, M (2010).

The people in the field of Educational Technology who work within this perspective or area are concerned with the design and development of effective communication materials, particularly as they apply to learning with media. They may work with educational films and video or they may be graphic artists who create images to be used in teaching and learning. In schools today we have "Media Specialists" whose job it is to help schools and individual teachers to use select and implement media solutions in classrooms. And more and more people who work with media and audio-visual communication are moving to work with interactive media, such as educational software and online learning environments.

There are basic operations and concepts for students to demonstrate a sound understanding of the nature and operation of technology systems. In this case the students are proficient in the use of technology. Educational technology helps students understand the ethical, cultural, and societal issues related to technology especially the social media and morality. Therefore, students practice responsible use of technology systems, information, and software by developing positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

Furthermore, in the modern technological world, students use technology tools to enhance learning, increase productivity, and promote creativity. Students use productivity tools to collaborate in

constructing technology-enhanced models, prepare publications, and produce other creative works such as computer graphics. Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences. Technology can be used by the students use as tools to process data and report results for example, excel. Students evaluate and select new information resources to be used in problem-solving and decision-making tools especially medical problems such the outbreaks of any pandemic in the country technology can help in research. Having done the research, students will use technology resources for solving problems and making informed decisions without using assumptions because students employ technology in the development of strategies for solving problems in the real world.

In the same development, teachers also use technology to plan and design effective learning environments and experiences supported by technology. Teachers design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners to apply current research on teaching and learning with technology when planning learning environments and experiences. They should identify and locate technology resources and evaluate them for accuracy and suitability. The teachers plan for the management of technology resources within the context of learning activities and plan strategies to manage student learning in a technology-enhanced environment, Suvorov R. (2010)

Teachers implement curriculum plans that include methods and strategies for applying technology to maximize student learning. Teachers facilitate technology-enhanced experiences that address content standards and student technology standards. The use of technology will support learner-centred strategies that address the diverse needs of students. Therefore, it is important to apply technology to develop students' higher order skills and creativity and technology-enhanced environment.

CHAPTER TWO: LITERATURE REVIEW
2.1.   INTRODUCTION

The purpose of this section is to report the findings of a research conducted to evaluate the effect of learning preconceptions, prior e-learning experience, ability and interest of students on their perceptions regarding the process of e-learning. We study the effectiveness of e-learning as it relates to the level of e-learning experience.

2.2.   REVIEW OF THE LITERATURE

Effectiveness of e-learning

The traditional educational delivery system in universities and colleges has for a relatively long period of time been a classroom with a professor giving lectures to students and the students listening and taking notes. Interaction between the professor and students has been perceived to be a crucial learning ingredient in this delivery platform. Innovations in educational delivery mechanisms such as interactive and reflective schools of thought [2] have, however, challenged the traditional approaches to education. Progress in information technology has enabled new educational delivery methods such as distance learning and e-learning. As an outcome of this, many universities and colleges have entered this new e-learning world in a major way. For this reason, the need for pedagogical and technical knowledge to teach using the Internet has emerged, and this knowledge is slowly becoming a core competence for many teachers. Given the proliferation of electronic mediated teaching, the essential question here is that how and to what extent e-learning and the information technology is changing the dynamics of teaching and learning. Some researchers have predicted that the traditional classrooms will is appear [3, 4]. E-learning has entered the education as well as the corporate world in a major way and it also complements the traditional delivery methods. It has facilitated the traditionally difficult educational paradigms such as adult learning or distance learning. E-learning can be viewed as an

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alternative to the face-to-face teaching method or as a complement to it. E-learning usually allows the student a greater choice as well as responsibility for their own learning [2,5]. E-learning can change the methods of learning and has the promise to overcome the barriers of time, distance, and economics [6, 7].

e-Learning and semantic web

The great success of the current WWW leads to a new challenge: a huge amount of data is interpretable by humans only; machine support is limited. Berners-Lee suggests enriching the Web by machine-process able information, which supports the user in his tasks. For instance, today's search engines are already quite powerful, but still return too often too large or inadequate lists of hits. Machine-process able information can point the search engine to the relevant pages and can thus improve both precision and recall. To reach this goal the semantic web will be built up in different levels: Unicode/Unified Resource Identifiers, XML, RDF, ontologies, logic, proof, and trust (The important property of the Semantic

Attitudes concerning e-learning, echoed by scholarly and academic reviews, range from neutral to positive. On one hand, it is noted that e-learning is at least as effective as traditional instructional strategies (Rosenberg, Grad and Matear, 2003), and that there are no major differences in academic performance between the more traditional and more technology-oriented modes of instruction (Cavanaugh, 2001). On the other hand, many reviews go further, reflecting a principally positive attitude towards the impact of e-learning (Mayer, 2003). The current piece sought to demystify e-learning by concentrating on how specific e-learning factors (socio-demographic characteristics, hours spent on-line and prior computer skills) influence individual academic performance.

There is a considerable body of evidence to suggest that different teaching delivery styles can have different degrees of success; as measured in terms of academic results (Emerson & Taylor, 2004). In relation to online teaching, some studies indicate that this medium of delivery has a positive impact on performance, for example, Smith and Hardaker (2000). Other studies however, find that greater online teaching has a negative impact on performance (Johnson, 2005).

Benefits include offering a variety of new possibilities to learners (Breuleux, Laferrière, & Lamon, 2002), in addition to having a positive effect on students' achievement in different subject matter areas (Chambers, 2003). Other benefits of electronic education include increases in enrollment or time in school as education programs reach underserved regions, broader educational opportunity for students who are unable to attend traditional schools, access to resources and instructors not locally available, and increases in student-teacher communication. According to Barker & Wendel (2001) students in virtual schools showed greater improvement that their conventional school counterparts in critical thinking, researching, using computers, learning independently, problem-solving, creative thinking, decision-making, and time management. A study by Calderoni (1998) revealed that academic advantages over traditional classroom instruction were demonstrated by students in Mexico's Telesecundaria program, who were "substantially more likely than other groups to pass a final 9th grade examination" administered by the state; by students taking a chemistry by satellite course (Dees 1994); and by students learning reading and math via interactive radio instruction (Yasin & Luberisse 1998).

Electronic education is not the most effective choice in all situations. Students may feel isolated, parents may have concerns about children's social development, students with language difficulties may experience a disadvantage in a text-heavy online environment, and subjects requiring physical demonstrations of skill such as music, physical

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education, or foreign language may not be practical in a technology-mediated setting. Bond (2002) found that distance between tutor and learner in an online instrumental music program has negative effects on performance quality, student engagement, and development and refinement of skills and knowledge. Virtual school students show less improvement than those in conventional schools in listening and speaking skills (Barker & Wendel 2001). Highly technical subjects have also proven to be difficult to teach well online. The Alberta Online Consortium evaluated student performance on end-of-year exams among virtual school students across the province, and found that virtual school student scores in mathematics, and the sciences lagged significantly behind scores of non-virtual school students (Schollie, 2001).

Kearsley (2000) notes that given instruction of equal quality, groups of students learning online generally achieve at levels equal to their peers in classrooms. Equality between the delivery systems has been well documented over decades for adult learners. Evidence to date convincingly demonstrates that when used appropriately, electronically delivered education— 'e-learning'— can improve how students learn, can improve what students learn, and can deliver high-quality learning opportunities to all children" (NASBE, 2001).

A primary characteristic that sets successful distance learners apart from their classroom-based counterparts is their autonomy (Keegan 1996) and greater student responsibility as is noted by Wedemeyer (1981). A second characteristic that differentiates successful distance learners from unsuccessful ones is an internal locus of control, leading them to persist in the educational endeavor (Rotter 1989).

Teachers apply technology to facilitate a variety of effective assessment and evaluation strategies. They also apply technology in assessing student learning of subject matter using a variety of assessment techniques. Technology resources help to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning. Finally, in the same development, apply multiple methods of evaluation to determine students' appropriate use of technology resources for learning, communication and productivity.

Teachers use technology to enhance their productivity and professional practice to use technology resources to engage in ongoing professional development and lifelong learning. Technology can be used to continually evaluate and reflect on professional practice to make informed decisions and support of student learning. Teachers should apply technology to increase productivity and use technology to communicate in order to collaborate with peers, parents, and the larger community to nurture student learning, Mahmoud S.S (2017).

Teachers must understand the social, ethical, legal and human issues surrounding the use of technology in schools and apply those principles in practice. To apply technology resources will enable and empower learners with diverse backgrounds, characteristics, and abilities. Teachers should identify and use technology resources that affirm diversity to promote safe and healthy use of technology resources. Furthermore, facilitate equitable access to technology resources for all students. School districts across the country are not created equal. There is so much disparity in educational resources depending on the wealth, or lack thereof, depending on certain areas. Students using technology in low-income districts gain significant skills and advantages in the learning process. Using the same technology is an equalizer for disadvantaged students.

The world is moving towards technology at a breakneck pace. Educators have a responsibility to introduce, encourage, and help students to master technology, as well as subjects, as it applies to school and the future. Technology will be used in every aspect of the professional lives of current

students. So, upon graduation, whether the next step is college or career, technology will be used daily.

The savings which result from using technology can come in many facets. On a basic level technology can replace infrastructure. Desks, books, lab equipment and other items are a heavy cost burden on schools everywhere. Technology and devices can help save on these costs. In addition, geographically isolated or economically disadvantaged children can benefit from access to online software or resources which would be cost prohibitive without technology. Technology will give out updates on the software and educational content are not as expensive or cumbersome. With the help of technology, course curriculum can reflect real world data. In some applications, students can be exposed to real-time information.

„The information society is the society of self-exciting knowledge gaining where the main source of economic value is knowledge. The information revolution challenges schools, changes education and organizational-institutional frames of education. The nature of knowledge becomes multimedia, transdisciplinary and practical. Assessing students' performance can be done instantly with technology. It's more than just tests scores; simply understanding students' grasp of the subject in real time can be done on tablets in classrooms. A classroom could be questioned with a multiple-choice problem. Students could then input their answer and the feedback score is instantly given to the student and teacher. Corrections can be made long before examinations. Students and classrooms or even schools can be connected to anyone in the world instantly. Devices coupled to the Internet can allow for a free way to communicate globally. The chance to understand international or different cultural perspectives on the same topic is incredible.

Education coupled with technology is overall a very positive thing. It's still in relative infancy and progress will continue to move forward making better systems. Teachers will still retain control over learning. The school of 10 years ago looks very different from schools today. Also, students are being inundated with technology at a very young age. The transition has already begun. Education of the future will be delivered with current information delivered through traditional teaching methods and fantastic technological tools, Dusek V. (2014).

However, internet software successfully supports social constructionist epistemologies of teaching and learning. "Constructivist" is the name given to theories of learning grounded in an epistemological alternative to objectivist theories of knowledge. Central to such alternative and to constructivism in general, is the notion that meaning is imposed on the world rather than extant in it. Both objectivism and constructivism agree there is a real world we experience. However, while objectivists believe that meaning exists in that world to be discovered by us, constructivists believe that we impose meaning on it, Papert S, & Hard (2016)

They hold that meaning is constructed in our minds as we interact with the physical, social, and mental worlds we inhabit, and that we make sense of our experiences by building and adjusting such internal knowledge structures that collect and organize our perceptions of and reflections on reality. "Constructivism," then, refers to a set of psychological theories that share common assumptions about knowing and learning. Although constructivist theories have implications for pedagogy and instruction, they are not theories of either. According to constructivists, all learning involves mental construction, no matter how one is taught. All learning, they argue, occurs in our minds as we create and adjust internal mental structures to accommodate our ever growing and ever-changing stores of knowledge. Thus, according to constructivists, all learning is an active process and all knowledge is unique to the individual, whether acquired from lecture and text or discovered through experience. According to constructivists, all learning is therefore intimately tied to experience and the contexts of experience, no

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matter how or where that learning takes place, Vygotsky (1978).

Constructivism implies that the learner links new information with existing and future-oriented knowledge in unique and meaningful ways, Papert S & Hard (2016). Social constructivism, a branch of this theory, emphasizes the value of knowledge that is built socially in a learning community.

When talking about network learning we have to understand that it is not just about the effect of social psychology but also a cultural paradigm change. Before printed books, learning was based on verbalism and imitation: knowledge was stored in stories and distributed in social activities. In verbal culture, knowledge was based on a local community's direct experiences, verbal transmission, imitation and holistic learning. This connection between experience, community and knowledge has almost vanished, replaced by our modern-day specialized institutions. The invention of the printed book was a key turning point: knowledge separated from its carrier, became objectified, and in text form became available and transferrable to everyone. This is the base of typical scholarly cognition today: individualized experience gained from books. As Kristóf Nyíri writes: "compared to this, electronic communication is a return to simultaneity, cause and effect, action and reaction in other words to the characteristics of times before writing. Nyíri (1998).

"It is assumed that learners have to construct their own knowledge-- individually and collectively. Each learner has a tool kit of concepts and skills with which he or she must construct knowledge to solve problems presented by the environment. The role of the community-- other learners and teacher-- is to provide the setting, pose the challenges, and offer the support that will encourage mathematical construction, Richey R, C et al (2017). "Constructivism is not a theory about teaching…it is a theory about knowledge and learning… the theory defines knowledge as temporary,

developmental, socially and culturally mediated, and thus, non-objective. Papert S, & Hard (2016). The central principles of this approach are that learnt make sense of new situations in terms of their existing understanding. Learning involves an active process in which learners construct meaning by linking new ideas with their existing knowledge.

"Constructivists of different persuasion (hold a) commitment to the idea that the development of understanding requires active engagement on the part of the learner. One of the common threads of constructivism that runs across all these definitions is the idea that development of understanding requires the learner to actively engage in meaning-making. According to Glassersfeld (1995), "knowledge is not passively received but built up by the cognizing subject". Thus, constructivists shift the focus from knowledge as a product to knowing as a process. The common core of constructivist theory is that we do not find knowledge; we construct it (Piotrowski M (2010). From this point of view, the task of the educator is not to dispense knowledge but to provide students with opportunities and incentives to build it up (von Glassersfeld, 2005).

A good rule of thumb for curriculum design is to aim at being idea-based, not media-based. Every good teacher has found this out. Media can sometimes support the learning of ideas, but often the best solutions are found by thinking about how the ideas could be taught with no supporting media at all. Using what children know, can do, and are often works best. After some good approaches have been found, then there might be some helpful media ideas as well. Alan Kay, (1996)

The era of information society is not the first one when the importance of students' activity arose. Good teachers always knew exactly how important is not letting students be only the passive participants of lessons. According to the constructivist approach learning is creative process and its effectiveness depends on one hand on the personal talents of students and on the other hand

on the environment. Knowledge is a result of social cooperation developed in interaction with the environment. Teachers are not responsible for giving new knowledge but for supporting student in "building up" their knowledge

In this perspective, cognitive constructivism is social constructivism at the same time. In other words, we construct our own reality with those belonging to our social circle. For us, there is the world and we cannot disregard that; however, the relationship between us and the outside world is a joining as materialistic and structural as in a social environment. Today's constructivists have the tendency to prove their points by utilizing unique and scientific models as opposed to traditional methods.

Epistemologically, according to Dewey J (1999), knowledge is never a representation of the reality. The relationship between knowledge and reality is a result of individual and social experiences. Knowing is not for humans to find and record reality, but rather is a process of them being a part of the reality. Therefore, knowledge is not external and objective reality but a process that includes the action itself. Making inferences out of experiences constructs the wrong and right about the world. Enriched experiences change people's perception of right Bulut, (2014).

This can be done either through the historical development of knowledge or may be studied in growth and development of an individual, Sjoberg (2007). Piaget's main focus of constructivism has to do with the individual and how the individual constructs knowledge. Piaget's theory of cognitive constructivism proposes that humans cannot be given information, which they immediately understand and use; instead humans must construct their own knowledge (Piaget, 1952).

A point stressed in the constructivist paradigm is that the learner occupies the top position rather than the teacher. The learner gains by interaction with his or her own environment, and in doing so understands his/her own characteristics and perspectives. The learner constructs his own designs and finds his own solutions to problems and behaves autonomous and independent. According to constructivists, learning is a result of individual construction of ideas. For constructivists, learners are not passive receptors of knowledge provided by instructor. Instead, students construct meanings for concepts. As a result, learning is best undertaken in 'real world contexts in which students may acquire and test concepts. The administration of constructivist class is democratic. Within a democratic class environment, the sharing of responsibility and decision making is emphasized. In general terms the implementation of a democratic classroom and a constructivist learning environment can be thus defined, Dewey, (1990)

Instructional emphasis is on knowledge construction an environment, which supports active and collaborative learning by the learners. Therefore, in the classroom activities, learner centred, Socratic, authentic, individual and group work are a result of constructivism• Instructor or teachers' roles are to focuses on the student in learning, being a collaborator, facilitator, encourager, community builder. The Students should also play roles of being active, collaborator, and constructor of knowledge and self-monitoring for them to succeed.

Piaget (2010), claims that learning occurs through the construction of meaning rather than through passive reception. According to Piaget, when a student encounters new information, he performs the functions of assimilation and adaptation. He compares this information with knowledge already existing in his mind. If the old information does not comply with the new, he reconfigures his mind with regards to the new information. When examined from this point of view, cognitive development is a product of continuous effort. A student's thinking skills develops with an increase in knowledge and intellectual ability. As a result, as new information that is newly acquired is created, it is affected by

knowledge previously learned, Coates H, R et al (2005). This can be done even through internet.

Cognitive constructivism is very important because it clearly locates learning in the mind of the individual and because it defines it as an active process of mental construction linked to interactions with the environment. Moreover, stage theory reminds us that knowledge is constructed in very different ways by people in different stages of development; that, for example, novices to a field construct meaning differently than experts. Cognitive constructivism also posits the interrelated process of assimilation and accommodation (or similar mechanisms, to accomplish mental construction and so links all new learning to learners' pre-existing knowledge, bringing the issue of misconceptions and their nature more clearly in focus. Cognitive constructivism gives us the notion of knowledge organized internally as mental schemas that are in some broad sense peculiarly human. Mental schema has been variously characterized and studied, for example, as frames representing particular scenes, scripts representing complex actions, mental models representing causality, and semantic networks leading to representing relationships among ideas. All of these characterizations tell us something about the ways in which learners naturally organize and construct knowledge, hence suggest organizations of instruction that reflect and so support them.

"Computers can be the technical foundation of a new and dramatically enhanced literacy'' which will have penetration and depth of influence comparable to what we have already experienced in coming to achieve a mass, text-based literacy. Constructionists maintain that computers have the unique capacity to represent abstract ideas in concrete and malleable forms, Cavus N, A Momani (2009) Social constructivism is perhaps the most common version of constructivism currently in favour and so the theoretical framework normally evoked by the term "constructivism." Learning theories are called social constructivist when their main concern is with knowledge construction through social interactions maintained that, while taking place in individual minds, all learning results from social interaction, and that meaning is socially constructed through communication, activity, and interactions with others. He believed that cognitive skills and patterns of thinking are not primarily determined by innate factors (as in genetic epistemology), but rather are the products of the activities practiced in the social institutions of the culture in which the individual lives. Consequently, the history of the society in which one is reared and one's personal history are crucial determinants of the ways in which an individual will think. Even the solitary scholar alone in his room, Vygotsky (1978) argued, engages the artefacts and tools of his culture, and through them, their authors and the larger society. Moreover, such scholar's current activity is enabled by and so situated in a history of social and cultural interactions that have shaped her knowledge, attitudes, skills and behaviours

Two other important learning theorists who are sometimes considered social constructivists are Jerome Bruner and John Dewey (1997). A major theme in the theoretical framework of Dewey is that learning is an active process in which learners construct new ideas or concepts based upon their current knowledge. He believed that the individual's cognitive structures gave meaning and organization to such active experiences and allowed her to learn. Bruner is deemed a social constructivist because of the central role he saw language and other people playing in this process. Similarly, Dewey (1961), although he predates the social constructivist movement, is sometimes considered a social constructivist because he understood thought as the product of interaction with the environment, because of the importance he placed on active learning, and because of the central role language and social interaction plays in his notions of teaching and learning.

Social constructivism important to us because it reminds us that learning is essentially a social

activity, that meaning is constructed through communication, collaborative activity, and interactions with others. It highlights the role of social interactions in meaning making, especially the support of more knowledgeable others in knowledge construction. Social constructivism, moreover, encourages us to consider the critical function of language as the vehicle of thought, hence of knowing and learning, and the ways in which knowledge and knowing are culturally and historically determined and realized (Papert & Hard, 2016).

Environments that are learner-centred acknowledge constructivist notions that individuals bring unique knowledge, skills, attitudes, and beliefs to the learning experience, and that there are many ways to structure experience and many different perspectives or meanings that can be gleaned from any event or concept Blin F, M Munro (2017). Learner-centred teaching thus recognizes the importance of building on the conceptual and cultural knowledge that students bring with them to the learning experience, of linking learning to students' experiences, and of accepting and exploring multiple perspectives and divergent understandings. At the same time, learner-centred, teaching must be concerned with diagnosing and remediating students' misconceptions.

Constructivism suggests that such remediation requires accommodation; that is, that teachers must help students to make their thinking visible, to test it against experience, and to reconstruct more viable understandings. Online learning poses many challenges to the development of learner-centred environments, the majority of which stem from the facts that all interactions therein are necessarily mediated through the online environment, and that most online courses must be created before students join them. At the same time, the very characteristics of the online medium that create such challenges offer unique affordances to learner-centeredness, Dusek V, (2014). For example, computer-based

learning in general has long been supportive of individualized instruction.

Indeed, when Carol Twigg [30] gathered together a group of innovative virtual educators to discuss paradigm changes in online learning, their overall conclusion was that individualization, which they termed personalization, was the key to innovation in distance education. Twigg thus argues that quality online learning should include initial assessments of students' knowledge and skills, individual study plans involving an array of interactive learning materials, and built-in continuous assessment with instantaneous feedback. Some researchers are even experimenting with adaptive hypermedia that adjusts to individual learning styles, but much more research and development needs to be done in the area of individualization.

In the Research Centre for Educational Technology (RCET), has been developing a constructivist model to help us think about teaching and learning in face-to-face ubiquitous computing environments. I believe it might also be useful for organizing thinking about learning in virtual ubiquitous computing environments as well, and so help guide both the design of constructivist research and the development of related practices in online learning. Specifically, the model distinguishes three interacting domains of knowledge construction within which the effects of the unique affordances and constraints of online environments can be isolated and explored, Dusek V, (2014).

Online learning environments support new kinds of knowledge representation and have the potential to provide access to a much greater variety and a much, much greater quantity of representations of knowledge. The RCET model encourages us to explore such representations and their effects on learning, to pay close attention to the ways in which we represent the concepts we wish to present. Spector, J.M (2005) extensive investigations of combinations and sequences of differing media representations, for example, suggest that some of

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these are more conducive to learning scientific explanations than others work is particularly interesting in that he links external representations to internal conceptualizations and the construction of knowledge.

More work is clearly needed along similar lines, especially explorations of the uses of video and simulations in online environments, as is the use of digital learning objects in online courses interactivity in online discussion, for example, suggest that such patterns are as much a function of features of the interface as they are a result of pedagogical efforts. Similarly work on computer-supported collaborative learning suggests particular representations of knowledge are more supportive of collaboration than others. Clearly, a good deal more investigations into tools for supporting discussion and collaboration online are needed, as are studies of computer-based tools for scaffolding thinking and learning

In terms of practice, the RCET model encourages course developers and online instructors to seriously consider the ways in which they represent the concepts and skills they want students to acquire, and perhaps experiment with differing representations that take advantage of the unique capabilities of the online medium. Similarly, the model encourages designers and instructors to think hard about the kinds of activities and tools they ask students to engage and whether or not these really achieve the purposes for which they are intended. In short, the RCET model can help guide the practice of online education by focusing attention on the ways in which knowledge is represented in online courses. This is particularly important in the online environment because all learning therein is mediated through such representations

In social activities and interactions through and around which knowledge is negotiated and constructed. Our notion of use is thus derived from social constructivist theories of learning, but, although theoretically consistent with, may be pragmatically different from, some such theories. In

particular, the model distinguishes between conceptualizations of knowledge, which are seen as private and internal, and uses of knowledge, which are viewed as public and external, too artificially, isolate different arenas within which we can consider the effects of technology on learning. We find value in exploring use apart from conceptualization and representation because it directs our attention to the ways in which technologies can affect classroom activity in particular to explore the effects of technology on both social interactions and on the social activities involved in the kinds of external constructions of knowledge highlighted by constructionist thinkers.

3. RELATED WORKS

There are different expressions used to describe educational computer applications which help the students can access courses' contents in different formats (text, image, sound), as well as interact with teachers and/or colleagues, via message boards, forums, chats, video-conference or other types of communication tools. These platforms provide a set of configurable features, in order to allow the creation of online courses, pages of subjects, work groups and learning communities. Therefore, firstly this assignment defines Moodle and discusses its importance. Secondly, the assignment defines educational technology and finally the discussion continues on how internet software successfully supports social constructionist epistemologies of teaching and learning. In addition to the pedagogical dimension, these systems have a set of features for registering, monitoring and evaluation activities of students and teachers, enabling the contents' management via Internet.

Moodle which is Modular Object-Oriented Dynamic Learning Environment can be defined as a large, Web-based software package that enables instructors, trainers, and educators to create Internet-based courses, Hannafin and Land (2000). In the same development e-learning platform is one

of the components that are very important for the delivery of content to a learner. There are different e-learning platforms including learning management systems (LMS), course management system (CMS), virtual learning environment (VLE) Campanella, S. et al (2008). Some examples of LMS such as Moodle Coates H, R et al (2005) provide many capabilities like the interaction between teacher and students, feedback, conversation, and networking, etc.

Moodle represents one of the most widely used open-source e-learning platforms that enable the creation of a course website ensuring their access only to enrolled students. This platform allows the exchange of information among users geographically dispersed, through mechanisms of synchronous (chats) and communication or discussion forums. In a functional perspective, it has easily configurable features, allowing the creation of student assessment processes (quizzes, online tests and surveys), as well as managing their tasks with their timetable, besides offering a wide variety of complementary tools.

One of the greatest advantages in sticking with Moodle is that developers have kept the look and feel consistent over the years, and they have to continue to keep it consistent so that each upgrade doesn't feel like it's a piece of new software.

On Moodle, resources represent instructional materials that are usually created in digital formats and then uploaded to the platform. Web pages, PowerPoint files, word documents, flash animations, video and audio files represent some examples of these resources. Modules are components created via Moodle in order to provide interaction among students and teachers towards manipulation and content transformation to support them Moodle (2008).

However, educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources. The research in educational technology has grown from investigations attempting to "prove" that media and technology are effective tools for learning, to investigations created to describe and detail the appropriate applications of processes and technologies to the improvement of learning. Important to the newest research in educational technology are the use of authentic environments and the voice of practitioners as well as researchers.

The term technology comes from the Greek word techné, which was defined by the Greeks as a particular activity or kind of knowledge (Saettler, 1990). So, in the Greek tradition techné could be a physical device such as a computer or a video camera, but it could also be a type of knowledge, such as Gardner's multiple intelligences (Smith, 2005). Society today defines technology much more narrowly. Technology today is most often used today to mean a device. In Education today most people think of technology almost exclusively as the computer. But technology could be any tool that can be used to help promote human learning including video cameras, digital cameras, MP3 players, Portable Digital Assistants, and, of course, the computer. But in the field of Educational Technology we embrace the original meaning.

Inherent in the word "research" is the iterative process it encompasses. Research seeks to resolve problems by investigating solutions, and those attempts lead to new practice and therefore new problems and questions. Certainly, the ideas of reflective practice and inquiry based upon authentic settings are valuable perspectives on research. Reflective practitioners consider the problems in their environment (for example, a learning problem of their students) and attempt to resolve the problems by changes in practice, based upon both research results and professional experience. Reflection on this process leads to changes in the considered solution and further attempts to identify and solve problems in the environment, a cyclical process of practice/reflection that can lead to improved practice. Oliver, M (2002)

Teaching about the computer used to be defined as "computer literacy," a term that means that people know how the computer works and how to perform some troubleshooting and maintenance tasks. Computer literacy may not be as important today as it once was. Many students seem to come to school with an excellent set of technology skills (CNN,2005). For others Educational Technology may mean an Integrated Learning System (ILS). These systems provide basic instructions and a type of assessment for students. Students will log in with a username and password and work through modules in a variety of subjects from math to music. There will be quizzes and tests for the students to take, and the system can track the performance of the learner to help give the teacher a picture of how well a student is doing as alluded earlier.

While there are advantages to the use of integrated learning system, they are often seen as a blanket solution to the issue of using technology in the classroom. But too often they are not used in the classroom. Students go to the computer lab and work. In many schools the teacher does not go to the computer lab while students work on an ILS. So, if you are asking the question "how best to integrate technology into teaching and learning," ILS may not be the best answer. For others Educational Technology means integrating technology into teaching and learning, or, as it often called, technology integration.

Blogs provide an environment that potentially supports an active process of thinking and learning Paulsen M, (2003). They allow interactivity and, through the expression and discussion of individual ideas, a forum for learning, Cole J.H, Foster (2008). They can provide a record of conversation and evidence of collaboration that can be used by group members as a basis for thoughtful dialogue Coates H,R et al (2005) allowing the development of common meaning to be constructed from multiple perspectives (Marshall, 1995). The interaction can be between the learners and the teachers and also

the internet users can be involved in the interactions online.

In the same development, the object of educational technology is cast as "facilitating learning," a claim more modest than that of controlling or causing learning. Meanwhile it is intentional that learning is placed at the centre of the definition, to highlight the centrality of learning to educational technology. It is the goal of promoting learning that is distinctive about the field, compared to other fields with which it might be conflated, such as information technology or performance technology Oliver, M (2002). There is "improving performance" implies a quality criterion, a goal of facilitating learning better than is done with approaches other than Educational Technology, leading to usable skills, not just inert knowledge. And finally, it describes the major functions of the field (creation, use, and management) in broader, less technical terms than previous definitions in order to reflect an eclectic view of the design process.

Educational Technology is a field of study; much like history or literature is a field of study. Researchers and practitioners in the field of Educational Technology may specialize in particular areas, such as corporate training in education, or Internet based learning, much like in e-learning. But as with most fields, the field of Educational Technology holds some commonly held beliefs. The most important one is that Technology is defined broadly. Definition of technology to mean not only devices (we do love things that plug in), but also processes and strategies as well and to illustrate this point we offer up the classic Educational technology questions, Piotrowski, M (2010).

The people in the field of Educational Technology who work within this perspective or area are concerned with the design and development of effective communication materials, particularly as they apply to learning with media. They may work with educational films and video or they may be

graphic artists who create images to be used in teaching and learning. In schools today we have "Media Specialists" whose job it is to help schools and individual teachers to use select and implement media solutions in classrooms. And more and more people who work with media and audio visual communication are moving to work with interactive media, such as educational software and online learning environments.

There are basic operations and concepts for students to demonstrate a sound understanding of the nature and operation of technology systems. In this case the students are proficient in the use of technology. Educational technology helps students understand the ethical, cultural, and societal issues related to technology especially the social media and morality. Therefore, students practice responsible use of technology systems, information, and software by developing positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

Furthermore, in the modern technological world, students use technology tools to enhance learning, increase productivity, and promote creativity. Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works such as computer graphics. Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences. Technology can be used by the students use as tools to process data and report results for example, excel. Students evaluate and select new information resources to be used in problem-solving and decision-making tools especially medical problems such the outbreaks of any pandemic in the country technology can help in research. Having done the research, students will use technology resources for solving problems and making informed decisions without using assumptions because students employ technology in the development of strategies for solving problems in the real world.

In the same development, teachers also use technology to plan and design effective learning environments and experiences supported by technology. Teachers design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners to apply current research on teaching and learning with technology when planning learning environments and experiences. They should identify and locate technology resources and evaluate them for accuracy and suitability. The teachers plan for the management of technology resources within the context of learning activities and plan strategies to manage student learning in a technology-enhanced environment, Suvorou R. (2010)

Teachers implement curriculum plans that include methods and strategies for applying technology to maximize student learning. Teachers facilitate technology-enhanced experiences that address content standards and student technology standards. The use of technology will support learner-centred strategies that address the diverse needs of students. Therefore, it is important to apply technology to develop students' higher order skills and creativity and technology-enhanced environment.

Teachers apply technology to facilitate a variety of effective assessment and evaluation strategies. They also apply technology in assessing student learning of subject matter using a variety of assessment techniques. Technology resources help to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning. Finally in the same development, apply multiple methods of evaluation to determine students' appropriate use of technology resources for learning, communication and productivity.

Teachers use technology to enhance their productivity and professional practice to use technology resources to engage in ongoing professional development and lifelong learning. Technology can be used to continually evaluate and

reflect on professional practice to make informed decisions and support of student learning. Teachers should apply technology to increase productivity and use technology to communicate in order to collaborate with peers, parents, and the larger community to nurture student learning, Mahmoud S.S (2008).

Teachers must understand the social, ethical, legal and human issues surrounding the use of technology in schools and apply those principles in practice. To apply technology resources will enable and empower learners with diverse backgrounds, characteristics, and abilities. Teachers should identify and use technology resources that affirm diversity to promote safe and healthy use of technology resources. Furthermore, facilitate equitable access to technology resources for all students. School districts across the country are not created equal. There is so much disparity in educational resources depending on the wealth, or lack thereof, depending on certain areas. Students using technology in low-income districts gain significant skills and advantages in the learning process. Using the same technology is an equalizer for disadvantaged students.

The world is moving towards technology at a breakneck pace. Educators have a responsibility to introduce, encourage, and help students to master technology, as well as subjects, as it applies to school and the future. Technology will be used in every aspect of the professional lives of current students. So upon graduation, whether the next step is college or career, technology will be used daily.

Using mobile technology the classroom can be taken anywhere. With all the knowledge and resources contained and deliverable on demand on a mobile device, students can learn at home or in the "field". Mobile technology allows for greater collaboration between students promoting strong foundations in group work, Moura A,A.A & Carvalho (2009).

Technology helps to track and reports student's progress instantly which gives feedback and provides instant motivation to improve performance. Similarly, students who use technology are motivated to improve performance just like they do at home on their gaming consoles. Trying to beat high scores at home and trying to beat high scores in math use the same psychology. At the same time, the paradigms of obtaining knowledge are changing also: lifelong learning becoming the dominant pattern, the conceptual difference between child and adult diminishes and formal scholar institutions have turned into open virtual environments. Printed material loses its place in communication mediums and virtual learning will become familiar. Nyíri (2003)

This runs along the same lines as motivation. Creating a social element to educational technology can allow for healthy competition amongst peers both in the same classroom and across the country brings out motivation. Performing well and earning badges to gain virtual social status is at the heart of many social applications today. Personal identities do not have to be used; instead, students could use avatars to hide possible confidentiality breaches. Using technology to make education have social elements can make learning very addictive.

The savings which result from using technology can come in many facets. On a basic level technology can replace infrastructure. Desks, books, lab equipment and other items are a heavy cost burden on schools everywhere. Technology and devices can help save on these costs. In addition, geographically isolated or economically disadvantaged children can benefit from access to online software or resources which would be cost prohibitive without technology. Technology will give out updates on the software and educational content are not as expensive or cumbersome. With the help of technology, course curriculum can reflect real world data. In some applications, students can be exposed to real-time information.

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Constructivism implies that the learner links new information with existing and future-oriented knowledge in unique and meaningful ways, Papert S & Hard (1991). Social constructivism, a branch of this theory, emphasizes the value of knowledge that is built socially in a learning community.

When talking about network learning we have to understand that it is not just about the effect of social psychology but also a cultural paradigm change. Before printed books, learning was based on verbalism and imitation: knowledge was stored in stories and distributed in social activities. In verbal culture, knowledge was based on a local community's direct experiences, verbal transmission, imitation and holistic learning. This connection between experience, community and knowledge has almost vanished, replaced by our modern day specialized institutions. The invention

of the printed book was a key turning point: knowledge separated from its carrier, became objectified, and in text form became available and transferrable to everyone. This is the base of typical scholarly cognition today: individualized experience gained from books. As Kristóf Nyíri writes: "compared to this, electronic communication is a return to simultaneity, cause and effect, action and reaction in other words to the characteristics of times before writing. Nyíri (1998).

"It is assumed that learners have to construct their own knowledge-- individually and collectively. Each learner has a tool kit of concepts and skills with which he or she must construct knowledge to solve problems presented by the environment. The role of the community-- other learners and teacher-- is to provide the setting, pose the challenges, and offer the support that will encourage mathematical construction, Richey R,C et al (2008). "Constructivism is not a theory about teaching…it is a theory about knowledge and learning… the theory defines knowledge as temporary, developmental, socially and culturally mediated, and thus, non-objective. Papert S,& Hard (1991). The central principles of this approach are that learnt make sense of new situations in terms of their existing understanding. Learning involves an active process in which learners construct meaning by linking new ideas with their existing knowledge.

"Constructivists of different persuasion (hold a) commitment to the idea that the development of understanding requires active engagement on the part of the learner. One of the common threads of constructivism that runs across all these definitions is the idea that development of understanding requires the learner to actively engage in meaning-making. According to Glassersfeld (1995), "knowledge is not passively received but built up by the cognizing subject". Thus, constructivists shift the focus from knowledge as a product to knowing as a process. The common core of constructivist theory is that we do not find

knowledge; we construct it (Piotrowski M (2010). From this point of view, the task of the educator is not to dispense knowledge but to provide students with opportunities and incentives to build it up (von Glassersfeld, 2005).

A good rule of thumb for curriculum design is to aim at being idea-based, not media-based. Every good teacher has found this out. Media can sometimes support the learning of ideas, but often the best solutions are found by thinking about how the ideas could be taught with no supporting media at all. Using what children know, can do, and are often works best. After some good approaches have been found, then there might be some helpful media ideas as well. Alan Kay, (1996)

The era of information society is not the first one when the importance of students' activity arose. Good teachers always knew exactly how important is not letting students be only the passive participants of lessons. According to the constructivist approach learning is creative process and its effectiveness depends on one hand on the personal talents of students and on the other hand on the environment. Knowledge is a result of social cooperation developed in interaction with the environment. Teachers are not responsible for giving new knowledge but for supporting student in "building up" their knowledge

In this perspective, cognitive constructivism is social constructivism at the same time. In other words, we construct our own reality with those belonging to our social circle. For us, there is the world and we cannot disregard that; however, the relationship between us and the outside world is a joining as materialistic and structural as in a social environment. Today's constructivists have the tendency to prove their points by utilizing unique and scientific models as opposed to traditional methods.

Epistemologically, according to Dewey J (1999), knowledge is never a representation of the reality. The relationship between knowledge and reality is a result of individual and social experiences.

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Knowing is not for humans to find and record reality, but rather is a process of them being a part of the reality. Therefore, knowledge is not external and objective reality but a process that includes the action itself. Making inferences out of experiences constructs the wrong and right about the world. Enriched experiences change people's perception of right Bulut, (2006).

This can be done either through the historical development of knowledge or may be studied in growth and development of an individual, Sjoberg (2007). Piaget's main focus of constructivism has to do with the individual and how the individual constructs knowledge. Piaget's theory of cognitive constructivism proposes that humans cannot be given information, which they immediately understand and use; instead humans must construct their own knowledge (Piaget, 1952).

A point stressed in the constructivist paradigm is that the learner occupies the top position rather than the teacher. The learner gains by interaction with his or her own environment, and in doing so understands his/her own characteristics and perspectives. The learner constructs his own designs and finds his own solutions to problems and behaves autonomous and independent. According to constructivists, learning is a result of individual construction of ideas. For constructivists, learners are not passive receptors of knowledge provided by instructor. Instead, students construct meanings for concepts. As a result learning is best undertaken in 'real world contexts in which students may acquire and test concepts. The administration of constructivist class is democratic. Within a democratic class environment, the sharing of responsibility and decision making is emphasized. In general terms the implementation of a democratic classroom and a constructivist learning environment can be thus defined, Dewey, (1990)

Instructional emphasis is on knowledge construction an environment, which supports active and collaborative learning by the learners.

Therefore, in the classroom activities, learner centred, Socratic, authentic, individual and group work are a result of constructivism• Instructor or teachers roles are to focuses on the student in learning, being a collaborator, facilitator, encourager, community builder. The Students should also play roles of being active, collaborator, and constructor of knowledge and self monitoring for them to succeed.

Piaget (1977), claims that learning occurs through the construction of meaning rather than through passive reception. According to Piaget, when a student encounters new information, he performs the functions of assimilation and adaptation. He compares this information with knowledge already existing in his mind. If the old information does not comply with the new, he reconfigures his mind with regards to the new information. When examined from this point of view, cognitive development is a product of continuous effort. A student's thinking skills develops with an increase in knowledge and intellectual ability. As a result, as new information that is newly acquired is created, it is affected by knowledge previously learned, Coates H, R et al (2005). This can be done even through internet.

Cognitive constructivism is very important because it clearly locates learning in the mind of the individual and because it defines it as an active process of mental construction linked to interactions with the environment. Moreover, stage theory reminds us that knowledge is constructed in very different ways by people in different stages of development; that, for example, novices to a field construct meaning differently than experts. Cognitive constructivism also posits the interrelated process of assimilation and accommodation (or similar mechanisms, to accomplish mental construction and so links all new learning to learners' pre-existing knowledge, bringing the issue of misconceptions and their nature more clearly in focus. Cognitive constructivism gives us the notion of knowledge organized internally as mental schemas that are in some broad sense peculiarly

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human. Mental schema have been variously characterized and studied, for example, as frames representing particular scenes, scripts representing complex actions, mental models representing causality, and semantic networks leading to representing relationships among ideas. All of these characterizations tell us something about the ways in which learners naturally organize and construct knowledge, hence suggest organizations of instruction that reflect and so support them.

"Computers can be the technical foundation of a new and dramatically enhanced literacy'' which will have penetration and depth of influence comparable to what we have already experienced in coming to achieve a mass, text-based literacy. Constructionists maintain that computers have the unique capacity to represent abstract ideas in concrete and malleable forms, Cavus N, A Momani (2009)

Social constructivism is perhaps the most common version of constructivism currently in favour and so the theoretical framework normally evoked by the term "constructivism." Learning theories are called social constructivist when their main concern is with knowledge construction through social interactions maintained that, while taking place in individual minds, all learning results from social interaction, and that meaning is socially constructed through communication, activity, and interactions with others. He believed that cognitive skills and patterns of thinking are not primarily determined by innate factors (as in genetic epistemology), but rather are the products of the activities practiced in the social institutions of the culture in which the individual lives. Consequently, the history of the society in which one is reared and one's personal history are crucial determinants of the ways in which an individual will think. Even the solitary scholar alone in his room, Vygotsky (1978) argued, engages the artefacts and tools of his culture, and through them, their authors and the larger society. Moreover, such scholar's current activity is enabled by and so situated in a history of social and cultural

interactions that have shaped her knowledge, attitudes, skills and behaviours

Two other important learning theorists who are sometimes considered social constructivists are Jerome Bruner and John Dewey (1997). A major theme in the theoretical framework of Dewey is that learning is an active process in which learners construct new ideas or concepts based upon their current knowledge. He believed that the individual's cognitive structures gave meaning and organization to such active experiences and allowed her to learn. Bruner is deemed a social constructivist because of the central role he saw language and other people playing in this process. Similarly, Dewey (1961), although he predates the social constructivist movement, is sometimes considered a social constructivist because he understood thought as the product of interaction with the environment, because of the importance he placed on active learning, and because of the central role language and social interaction plays in his notions of teaching and learning.

Social constructivism important to us because it reminds us that learning is essentially a social activity, that meaning is constructed through communication, collaborative activity, and interactions with others. It highlights the role of social interactions in meaning making, especially the support of more knowledgeable others in knowledge construction. Social constructivism, moreover, encourages us to consider the critical function of language as the vehicle of thought, hence of knowing and learning, and the ways in which knowledge and knowing are culturally and historically determined and realizedPapert S, & Hard (1991).

Environments that are learner-centred acknowledge constructivist notions that individuals bring unique knowledge, skills, attitudes, and beliefs to the learning experience, and that there are many ways to structure experience and many different perspectives or meanings that can be gleaned from any event or concept Blin F, M Munro (2008).

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Learner-centred teaching thus recognizes the importance of building on the conceptual and cultural knowledge that students bring with them to the learning experience, of linking learning to students' experiences, and of accepting and exploring multiple perspectives and divergent understandings. At the same time, learner-centred, teaching must be concerned with diagnosing and remediating students' misconceptions.

Constructivism suggests that such remediation requires accommodation; that is, that teachers must help students to make their thinking visible, to test it against experience, and to reconstruct more viable understandings. Online learning poses many challenges to the development of learner-centred environments, the majority of which stem from the facts that all interactions therein are necessarily mediated through the online environment, and that most online courses must be created before students join them. At the same time, the very characteristics of the online medium that create such challenges offer unique affordances to learner-centeredness, Dusek V, (2006). For example, computer-based learning in general has long been supportive of individualized instruction.

Indeed, when Carol Twigg [30] gathered together a group of innovative virtual educators to discuss paradigm changes in online learning, their overall conclusion was that individualization, which they termed personalization, was the key to innovation in distance education. Twigg thus argues that quality online learning should include initial assessments of students' knowledge and skills, individual study plans involving an array of interactive learning materials, and built-in continuous assessment with instantaneous feedback. Some researchers are even experimenting with adaptive hypermedia that adjusts to individual learning styles, but much more research and development needs to be done in the area of individualization.

4. SUMMARY

In conclusion, there is a growing body of research that examines social contexts created through digital environments. Research on computer-supported collaborative learning has not only shown that computer based collaboration can enhance higher-order learning, but has identified particular program designs and features which support specific kinds of external constructions of knowledge in relation to online learning environments. In the online learning domain, research on computer-mediated communication has found online class discussions even through Moodle to be more equitable and democratic and more reflective than traditional classroom discussion, and has documented links between online interactions and learning. Interesting research in this area also links specific design features to particular discourse behaviours, and particular online teaching behaviours to student learning and course satisfaction. Technology which is the systematic application of techniques and principles of science are to be used to achieve an objective effectively and efficiently. As a field of study, educational technology emphasizes communication skills and approaches to teaching and learning through the judicious use and integration of diverse media. Practitioners in educational technology seek new and effective ways of organizing the teaching-learning process through the best possible application of technological developments such as Moodle. These activities rely upon a body of knowledge for successful and ethical implementation, rather than as routine.

CHAPTER THREE METHODOLOGY
1. INTRODUCTION

The design methodology to be used in the proposed system was parallel as a result of the fact that parallel methods support the use of the proposed system side by side with the existing system in order to test for the system efficiency. Top down approach was used as well in the design because it allows the analysis of the system to be carried out one after the other.

In this stage, the first goal was decided by task analysis. Next, the prototype of the system will be analyzed. Then testing will be made on its usability and design with some design theories. A more complete prototype was tested by potential users to collect feedbacks. Lastly, the system was finalized with the amendment on some problems of the user interface.

2. BASELINE STUDY
I. DATA COLLECTION

The required data was collected mainly through interviews, internet search and questionnaires

II. RESEARCH APPROACH

Qualitative research is description-based. Qualitative researchers observe and interview people. They take observations of people or events and analyze it through qualitative methods. They look for trends, just as quantitative researchers do with statistics, but they don't use numbers to find them. The researcher used a Qualitative research approach.

III. DEVELOPMENT OF THE APPLICATION

The following tools are going to be used for developing the system:

➢ PHP: for web server scripting

➢ HTML,CSS,JQUERY : for user interface
➢ MYSQL: for database manipulation
➢ Personal computer running windows 7 operating system.
➢ Wamp server: for executing server-side code.
➢ Web browser: for testing/running the system.

IV. SYSTEM DESIGN

The requirements collected in the requirements specification stage was used to design the logic and required interfaces of the system. This will give an overview of how the system modules are going to interact with each other.

3. SYSTEM DESIGN
#### I. CONTEXT DIAGRAM
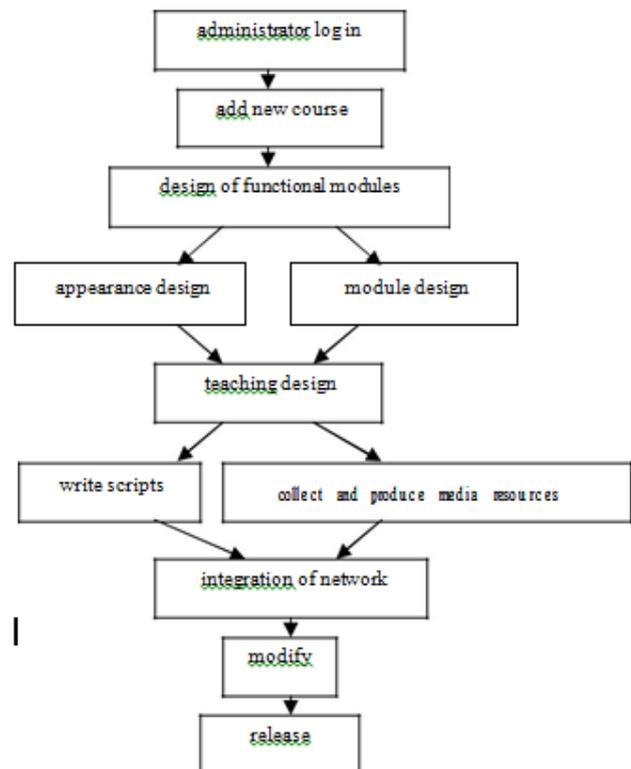
Figure 3-1 Course Design Flowchart

II. SYSTEM SOFTWARE LEVEL ARCHITECTURAL DESIGN

INTRODUCTION TO .NET FRAMEWORK

The Microsoft .NET framework is a software technology that is available with several Microsoft windows operating systems. It includes a large library of pre-coded solutions to common programming problems and a virtual machine that manages the executions of programs written specifically for the framework. The .Net framework is a key Microsoft is offering and is intended to be used by newest applications created for windows platform.

The pre-coded solutions that form the framework's base class library cover a large range of programming needs in a number of areas, including user interface, data access, database connectivity, cryptography, web applications development, numeric algorithms and network communications. The class library is used by programmers, who combine it with own code to produce applications. Programs written for the .NET framework execute in a software environment that manages the program runtime requirements. Also part of the .NET framework, this runtime environment is known as the Common Language Runtime (CLR). The CLR provides the appearance of an application virtual machine so that programmers need not to consider the capabilities of the specific CPU that will execute the program. The CLR also provides other important services such as security, memory management, and exception handling. The class library and the Common Language Runtime(CLR) together compose the .NET framework.

Principal Design features

Interoperability

Because interaction between older and new applications is commonly required, the .NET framework provides means to access functionalities that is implemented in the programs that are executed outside the .NET framework environment. Access to Com component is provided in the System Runtime Interop Services and System Enterprise Services namespaces of the framework; access to other functionality is provided using the P/invoke features.

Common Runtime Engine

The common language runtime (CLR) is the virtual machine components the .NET framework. All .NET programs execute under the supervision of the CLR, guaranteeing certain properties and behavior in the areas of memory management, security, and exception handling.

Base Class library

The base class library (BCL), part of the framework class library (FCL), is a library of functionality available to all languages using the .NET framework. The (BCL) provides classes which encapsulates a number of common functions, including file reading and writing, graphic rendering, database interaction and XML documents manipulations.

Simplified Deployment

Installations of computer software must be carefully managed to ensure that it does not interfere with previous installed software, and that it conforms to security requirements. The .NET framework includes design features and tools that help address these requirements.

Security

The design is meant to address some of the vulnerabilities, such as buffer overflows, that have been exploited by malicious software. Additionally, .NET provides a common security model for all applications.

Portability

The design of the .NET framework allows it to theoretically be platform agnostic, and thus cross-platform compatible. That is, a program written to used framework should run without change on any type of system on which the framework is implemented. Microsoft commercial implementations of the framework cover Windows, Windows CE, and the Xbox. In addition, Microsoft submits the specifications for the common language

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infrastructure (which includes the core class libraries, common type system and the common immediate language), the C# language, and the C++/CLI language to both ECMA and the ISO, making them available as open standards. This makes it possible for third parties to create compatible implementations of the framework and it languages on other platforms.

Architecture
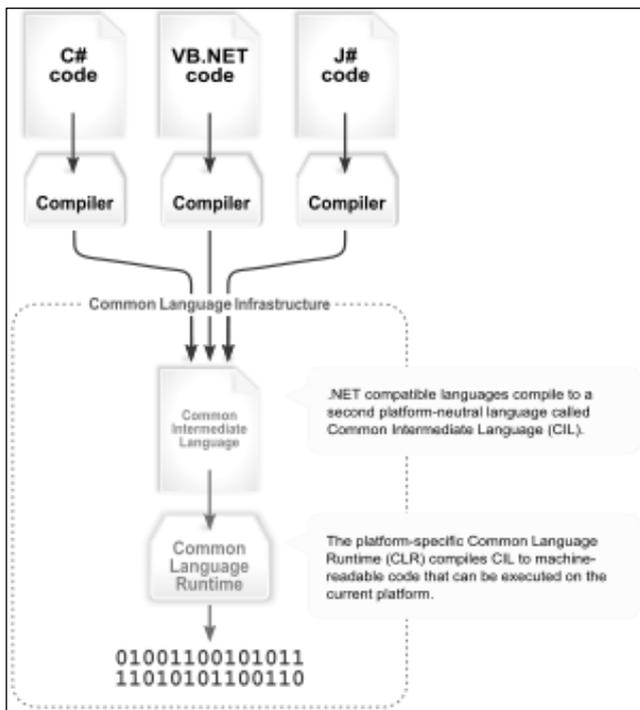
Visual overview of the common language Infrastructure (CLI)

Common Language Infrastructure

The core aspects of the .NET framework lie within the common language infrastructure, or CLI. The purpose of the CLI is to provide a language neutral platform for application development and execution, including functions for exception handling, garbage collection, security, and interoperability. Microsoft implementation of the CLI is called Common Language Runtime or CLR.

Assemblies

The intermediate CIL code is housed in .NET assemblies. As mandated by specification, assemblies are stored in the Portable Executable (PE) format, common on the Windows platform for all DLL and EXE files. The assembly consists of one or more files, one of which must contain the manifest, which has the metadata for the assembly. The complete name of an assembly (not to be confused with the filename on disk) contains its simple text name, version number, culture, and public key token. The public key token is a unique hash generated when the assembly is compiled, thus two assemblies with the same public key token are guaranteed to be identical from the point of view of the framework. A private key can also be specified known only to the creator of the assembly and can be used for strong naming and to guarantee that the assembly is from the same author when a new version of the assembly is compiled (required to add an assembly to the Global Assembly Cache).

Metadata

All CLI is self-describing through .NET metadata. The CLR checks the metadata to ensure that the correct method is called. Metadata is usually generated by language compilers but developers can create their own metadata through custom attributes. Metadata contains information about the assembly, and is also used to implement the reflective programming capabilities of .NET Framework.

Security

.NET has its own security mechanism with two general features: Code Access Security (CAS), and validation and verification. Code Access Security is based on evidence that is associated with a specific assembly. Typically, the evidence is the source of the assembly (whether it is installed on the local machine or has been downloaded from the intranet or Internet). Code Access Security uses evidence to determine the permissions granted to the code. Other code can demand that calling code is granted a specified permission. The demand causes the CLR

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to perform a call stack walk: every assembly of each method in the call stack is checked for the required permission; if any assembly is not granted the permission a security exception is thrown.

When an assembly is loaded the CLR performs various tests. Two such tests are validation and verification. During validation the CLR checks that the assembly contains valid metadata and CIL, and whether the internal tables are correct. Verification is not so exact. The verification mechanism checks to see if the code does anything that is 'unsafe'. The algorithm used is quite conservative; hence occasionally code that is 'safe' does not pass. Unsafe code will only be executed if the assembly has the 'skip verification' permission, which generally means code that is installed on the local machine. NET Framework uses app domains as a mechanism for isolating code running in a process. App domains can be created and code loaded into or unloaded from them independent of other appdomains. This helps increase the fault tolerance of the application, as faults or crashes in one appdomain do not affect rest of the application. Appdomains can also be configured independently with different security privileges. This can help increase the security of the application by isolating potentially unsafe code. The developer, however, has to split the application into sub domains; it is not done by the CLR.

Microsoft **.NET Framework** includes a set of standard **class libraries**. The class library is organized in a hierarchy of namespaces. Most of the built in APIs are part of either System.* or Microsoft.* namespaces. It encapsulates a large number of common functions, such as file reading and writing, graphic rendering, database interaction, and XML document manipulation, among others. The .NET class libraries are available to all .NET languages. The .NET Framework class library is divided into two parts: the **Base Class Library** and the **Framework Class Library**.

The **Base Class Library** (BCL) includes a small subset of the entire class library and is the core set of classes that serve as the basic API of the Common Language Runtime.The classes in mscorlib.dll and some of the classes in System.dll and System.core.dll are considered to be a part of the BCL. The BCL classes are available in both .NET Framework as well as its alternative implementations including .NET Compact Framework, Microsoft Silver light and Mono.

The **Framework Class Library** (FCL) is a superset of the BCL classes and refers to the entire class library that ships with .NET Framework. It includes an expanded set of libraries, including Win Forms, ADO.NET, ASP.NET, Language Integrated Query, Windows Presentation Foundation, Windows Communication Foundation among others. The FCL is much larger in scope than standard libraries for languages like C++, and comparable in scope to the standard libraries of Java.

Memory management
The .NET Framework CLR frees the developer from the burden of managing memory (allocating and freeing up when done); instead it does the memory management itself. To this end, the memory allocated to instantiations of .NET types (objects) is done contiguously from the managed heap, a pool of memory managed by the CLR. As long as there exists a reference to an object, which might be either a direct reference to an object or via a graph of objects, the object is considered to be in use by the CLR. When there is no reference to an object, and it cannot be reached or used, it becomes garbage. However, it still holds on to the memory allocated to it. .NET Framework includes a garbage collector which runs periodically, on a separate thread from the application's thread, that enumerates all the unusable objects and reclaims the memory allocated to them.

III. MODULAR DESIGN OF THE SYSTEM FUNCTION

As far as the project is developed the functionality is simple, the objective of the proposal is to strengthen the functioning of Audit Status Monitoring and make them effective and better. The entire scope has been classified into five streams knowns as coordinator level, management level, Auditor level, User level, State Web level. The proposed software will cover the information needs with respect to each request of the user group viz. accepting the request, providing vulnerability document report and the current status of audit.

OUTPUT DESIGN

Outputs from computer systems are required primarily to communicate the results of processing to users. They are also used to provide a permanent copy of the results for later consultations. The various type of outputs in general are:

- External outputs, whose destination is outside the organization.
- Internal outputs, whose destination is within the organization and they are the user's main interface with the computer.
- Operational outputs, whose use is purely within the computer department.
- Interface outputs, which involve the user in communicating directly.

OUTPUT DEFINITION

The outputs should be defined in terms of the following points:

- Type of the output
- Content of the output
- Format of the output
- Location of the output
- Frequency of the output
- Volume of the output
- Sequence of the output

It is not always desirable to print or display data as it is held on a computer. It should be decided as which form out is the most suitable.

For example

- Will decimals points need to inserted?
- Should leading zeros be suppressed.

OUTPUT MEDIA:

In the next stage it is to be decided which medium is the most appropriate for the output. The main considerations when deciding about the output media are:

- The suitability for the device to the particular application.
- The need for a hard copy.
- The response time required.
- The Locations of the users.
- The software and hardware available.

Keeping in view the above description the project is to have outputs mainly coming under the category of internal outputs. The main outputs desired according to the requirements specifications are:

- The outputs where needed to be generated as a hot copy and as well as a query to viewed on the screen. Keeping in view these outputs, the format for the output is taken from the outputs which are currently being obtained after manual processing. The standard printer is to be used as out media for hard copies.

IV. SYSTEM CLASS DIAGRAM

A data flow diagram is graphical tool used to describe and analyze movement of data through a system. These are the central tool and the basis from which the other components are developed. The transformation of data from input to output, through processed, may be described logically and independently of physical components associated with the system. These are known as the logical data flow diagrams. The physical data flow diagrams show the actual implements and movement of data between people, departments and workstations. A full description of a system

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actually consists of a set of data flow diagrams. Using two familiar notations Yourdon, Gane and Sarson notation develops the data flow diagrams. Each component in a DFD is labeled with a descriptive name. Process is further identified with a number that will be used for identification purpose. The development of DFD'S is done in several levels. Each process in lower level diagrams can be broken down into a more detailed DFD in the next level. The lop-level diagram is often called context diagram. It consists a single process bit, which plays vital role in studying the current system. The process in the context level diagram is exploded into other process at the first level DFD.

The idea behind the explosion of a process into more process is that understanding at one level of detail is exploded into greater detail at the next level. This is done until further explosion is necessary and an adequate amount of detail is described for analyst to understand the process.

Larry Constantine first developed the DFD as a way of expressing system requirements in a graphical from, this lead to the modular design.

A DFD is also known as a "bubble Chart" has the purpose of clarifying system requirements and identifying major transformations that will become programs in system design. So it is the starting point of the design to the lowest level of detail. A DFD consists of a series of bubbles joined by data flows in the system.

DFD SYMBOLS:

In the DFD, there are four symbols

1. A square defines a source(originator) or destination of system data
2. An arrow identifies data flow. It is the pipeline through which the information flows
3. A circle or a bubble represents a process that transforms incoming data flow into outgoing data flows.
4. An open rectangle is a data store, data at rest or a temporary repository of data

Process that transforms data flow.

Data flow

Source or Destination of data

Data Store
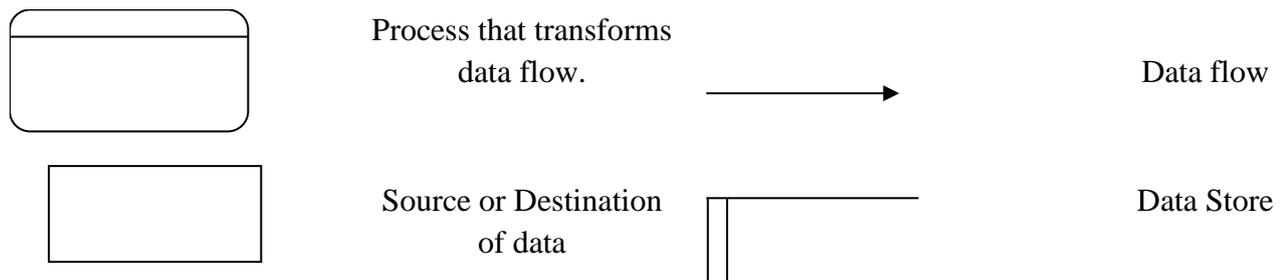
CONSTRUCTING A DFD:

Several rules of thumb are used in drawing DFD'S:

1. Process should be named and numbered for an easy reference. Each name should be representative of the process.
2. The direction of flow is from top to bottom and from left to right. Data traditionally flow from source to the destination although they may flow back to the source. One way to indicate this is to draw long flow line back to a source. An alternative way is to repeat the source symbol as a destination. Since it is used more than once in the DFD it is marked with a short diagonal.
3. When a process is exploded into lower level details, they are numbered.
4. The names of data stores and destinations are written in capital letters. Process and dataflow names have the first letter of each work capitalized.

A DFD typically shows the minimum contents of data store. Each data store should contain all the data elements that flow in and out.

Questionnaires should contain all the data elements that flow in and out. Missing interfaces redundancies and like is then accounted for often through interviews.

SAILENT FEATURES OF DFD'S

1. The DFD shows flow of data, not of control loops and decision are controlled considerations do not appear on a DFD.
2. The DFD does not indicate the time factor involved in any process whether the dataflow take place daily, weekly, monthly or yearly.
3. The sequence of events is not brought out on the DFD.

TYPES OF DATA FLOW DIAGRAMS

1. Current Physical
2. Current Logical
3. New Logical
4. New Physical

CURRENT PHYSICAL:

In Current Physical DFD process label include the name of people or their positions or the names of computer systems that might provide some of the overall system-processing label includes an identification of the technology used to process the data. Similarly, data flows and data stores are often labels with the names of the actual physical media on which data are stored such as file folders, computer files, business forms or computer tapes.

CURRENT LOGICAL:

The physical aspects at the system are removed as much as possible so that the current system is reduced to its essence to the data and the processors that transforms them regardless of actual physical form.

NEW LOGICAL:

This is exactly like a current logical model if the user were completely happy with the user were completely happy with the functionality of the current system but had problems with how it was implemented typically through the new logical model will differ from current logical model while

having additional functions, absolute function removal and inefficient flows recognized.

NEW PHYSICAL:

The new physical represents only the physical implementation of the new system.

RULES GOVERNING THE DFD'S PROCESS

1) No process can have only outputs.
2) No process can have only inputs. If an object has only inputs than it must be a sink.
3) A process has a verb phrase label.

DATA STORE

1) Data cannot move directly from one data store to another data store, a process must move data.
2) Data cannot move directly from an outside source to a data store, a process, which receives, must move data from the source and place the data into data store
3) A data store has a noun phrase label.

SOURCE OR SINK

The origin and /or destination of data.

1) Data cannot move direly from a source to sink it must be moved by a process
2) A source and /or sink has a noun phrase land

DATA FLOW

1) A Data Flow has only one direction of flow between symbols. It may flow in both directions between a process and a data store to show a read before an update. The later is usually indicated however by two separate arrows since these happen at different type.
2) A join in DFD means that exactly the same data comes from any of two or more different processes data store or sink to a common location.
3) A data flow cannot go directly back to the same process it leads. There must be at least one other process that handles the data flow produce some other data flow returns the original data into the beginning process.

4) A Data flow to a data store means update (delete or change).

5) A data Flow from a data store means retrieve or use.

A data flow has a noun phrase label more than one data flow noun phrase can appear on a single arrow as long as all of the flows on the same arrow move together as one package.

V. SYSTEM DATA MODEL DESIGN

ACCESS CONTROL FOR DATA WHICH REQUIRE USER AUTHENTICATION

The following commands specify access control identifiers and they are typically used to authorize and authenticate the users (command codes are shown in parentheses)

USERNAME (USER)

The user identification is that which is required by the server to have access to its file system. This command will normally be the first command transmitted by the user after the connection controls are made (some server may require this).

PASSWORD (PASS)

This command must be immediately preceded by the username command, and, for some sites, completes user identification for access control. Since password information is quite sensitive, it is desirable in general to "mask" it or suppress type out.

SYSTEM DESIGN

At this stage the researchers make a system design consisting of process modeling, data modeling, and interface design. The resultof the system design stage is a system design document that contains Data Flow Diagram (DFD), Entity Relationship Diagram (ERD), and interface design. This design result is then followed by construction.

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Powering tens of thousands of learning environments globally, Moodle is trusted by institutions and organisations large and small. Moodle's worldwide numbers of more than 90 million users across both academic and enterprise level usage makes it the world's most widely used learning platform.

2) Designed to support both teaching and learning

With over 10 years of development guided by social constructionist pedagogy, Moodle delivers a powerful set of learner-centric tools and collaborative learning environments that empower both teaching and learning.

3) Easy to use

A simple interface, drag-and-drop features, and well-documented resources along with ongoing usability improvements make Moodle easy to learn and use.

4) Free with no licensing fees

Moodle is provided freely as Open Source software, under the GNU General Public License. Anyone can adapt, extend or modify Moodle for both commercial and non-commercial projects without any licensing fees and benefit from the cost-efficiencies, flexibility and other advantages of using Moodle.

5) Always up-to-date

The Moodle project's open-source approach means that Moodle is continually being reviewed and improved on to suit the current and evolving needs of its users.

6) Moodle in your language

Moodle's multilingual capabilities ensure there are no linguistic limitations to learning online. The Moodle community has begun translating Moodle into more than 120 languages (and counting) so

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users can easily localise their Moodle site, along with plenty of resources, support and community discussions available in various languages.

All-in-one learning platform

Moodle provides the most flexible tool-set to support both blended learning and 100% online courses. Configure Moodle by enabling or disabling core features, and easily integrate everything needed for a course using its complete range of built-in features, including external collaborative tools such as forums, wikis, chats and blogs.

Highly flexible and fully customisable

Because it is open-source, Moodle can be customised in any way and tailored to individual needs. Its modular set up and interoperable design allows developers to create plugins and integrate external applications to achieve specific functionalities. Extend what Moodle does by using freely available plugins and add-ons - the possibilities are endless!

B. *Scalable to any size*

From a few students to millions of users, Moodle can be scaled to support the needs of both small classes and large organisations. Because of its flexibility and scalability, Moodle has been adapted for use across education, business, non-profit, government, and community contexts.

II. MANAGING A MOODLE SITE

A user with the role of Administrator is typically in charge of a Moodle site once it has been installed, although some tasks may be delegated to others by assigning them a role such as Manager. The links below provide more information about how to manage your Moodle site.

New to the role of site admin? See our Guide for new administrators.

Users and Courses

- Authentication - different methods of adding new users to your Moodle
- Managing accounts - how to search for, edit, delete or perform bulk actions on users
- Roles and permissions - how to add or remove permissions from students, teachers and other users on your Moodle
- Enrolments - different methods of adding users to courses

Server and Security

- Admin tools - a list of useful tools, such as Database search and replace and database transfer
- Backup - how to backup your site and courses
- Developer tools - how to debug your site, purge caches and tools for test sites only
- Performance - ways to check the efficiency and smooth running of your Moodle
- Security - how to keep your Moodle safe
- Web services - how to connect other systems and applications that communicate using web services, including Moodle Mobile, the official mobile app for Moodle

Site-wide settings

- Language - how to add new languages and alter the default terms used
- Location - how to set time zones for the site and users, and default city and country
- Logging - Manage log stores
- Server settings - registration, maintenance and default settings
- Site-wide reports - a list of useful reports for administrators
- Site appearance - ways to change the display and navigation of your site

LOGIN

The site administrator can define which log stores are available, and in which order, from *Administration>Site administration>Plugins>Logging>Manage log stores.*

Available stores are: Standard, Legacy and External database.

Note: A new Moodle site will have Standard logging enabled and Legacy logging disabled. A site which has been upgraded will have both enabled.

The default Standard log is very detailed and should meet most requirements. The Legacy log should be disabled unless you have old custom reports that need it. An External database log store also allows you to connect to an external log database.

Note that if you disable Legacy logs, you won't be able to look/show/display (existing) Legacy logs, and no new Legacy logs will be generated. This could be a problem for non -standard plugins which still generate Legacy logs instead of Standard logs. In time it is to be hoped all contributed plugins will use Standard logs. You can disable the legacy store plugin completely OR you can only disable writing to legacy log inside the plugin settings. In the second case, you will be able to read from the log but no new entries will be added. This is also what will be set automatically during upgrade.

DASHBOARD

SCHOOL REGISTRATION

A. Update registration on Moodle.net

We'd love to stay in touch and provide you with important things for your Moodle site!

By registering:

- You'll be one of the first to find out about important notifications such as security alerts and new Moodle releases.

- You can access and activate mobile push notifications from your Moodle site through our free Moodle app.

- You are contributing to our Moodle statistics of the worldwide community, which help us improve Moodle and our community sites.

- If you wish, your site can be included in the list of registered Moodle sites in your country.

ADDING NEW DEPARTMENT

B. Adding courses

- Courses are Moodle's learning areas, where teachers and students work together.

- You may add a new course by clicking the 'Add a new course' button on the front page or from the Manage courses and categories link in the Courses area of Site administration.

- If you plan to have many courses, you can upload courses in bulk via CSV file.

- If you want certain settings in your courses to be always pre-set for you when you make a new course, check out *Site administration > Courses > Course default settings*.

C. Adding a course

By default a regular teacher can't add a new course. To add a new course to Moodle, you need to have either Administrator, Course Creator or Manager rights.To add a course:

- From the Site administration link, click Courses>Manage courses and categories
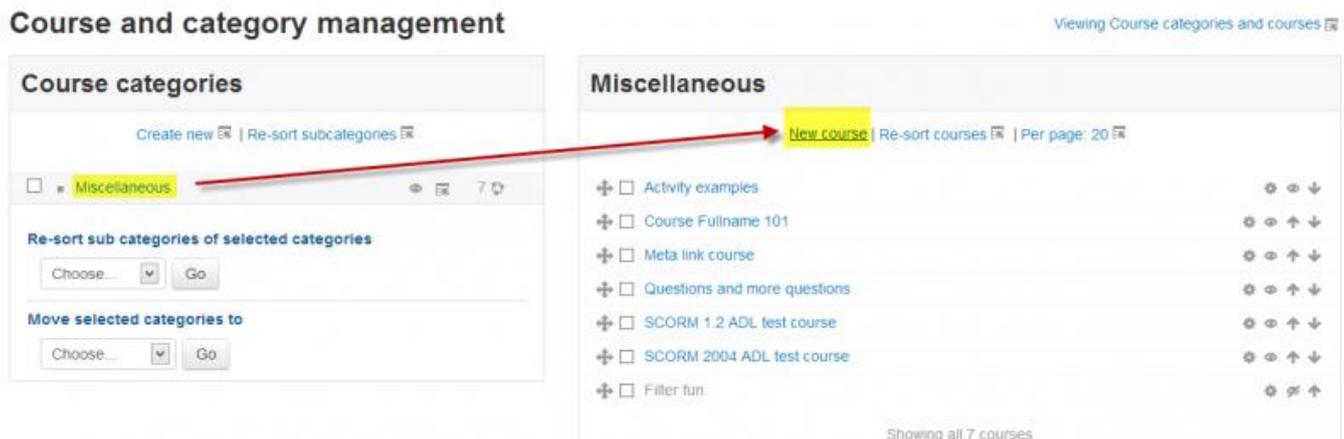
Click New course in the category page on the right

- Click on the category where you want your course to be. For more information see Course categories

- Click the "New course" link

- Enter the course settings, and then choose either to "Save and return" to go back to your course, or "Save and display" to go to the next screen.
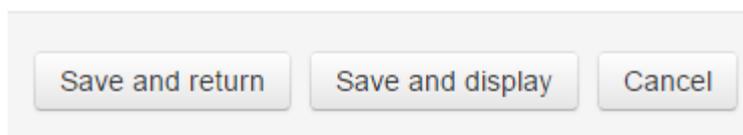
- On the next screen,if you have chosen "Save and display", choose your students/teachers to assign to the course.

D. Deleting a course

Teachers cannot delete courses. Managers (i.e. users with a role for which the capability Moodle/course: delete is allowed) can delete courses and course creators can delete courses they have created themselves, but only within 24 hours of creating the course. This is so that courses created by mistake may be deleted without needing to ask an administrator.

Administrators can always delete courses.

To delete a course (as an admin or manager):

1. From the Site administration link, click Courses > Manage courses and categories

2. Click the course's category and click the course in the screen on the right.

3. Click the Delete link.
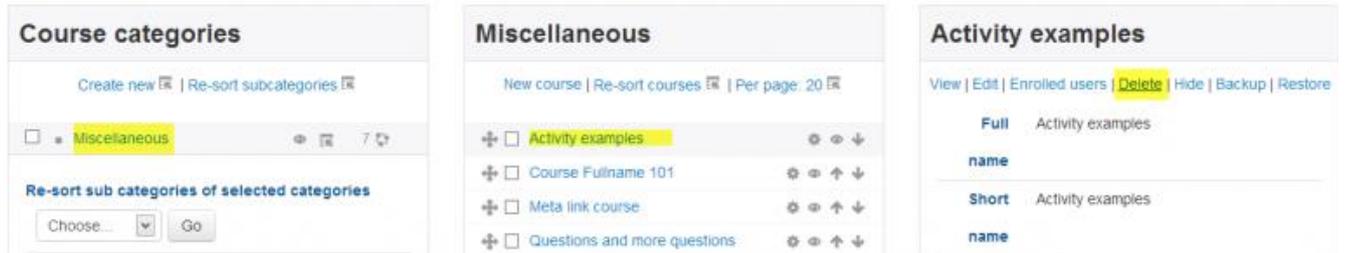
Deleting a course

You can delete multiple courses by:

- Creating a new (temporary) category. You can name it "To be deleted".

- Select and **move** the "About to be deleted" courses to that category ("To be deleted").

- Delete the category ("To be deleted") and choose "Delete ALL - cannot be undone".

There is no user interface for course creators to delete courses they have created; however they can do so by editing the URL of the course from http://yourmoodlesite.net/course/view.php?id=N to http://yourmoodlesite.net/course/delete.php?id=N (replacing 'view' with 'delete')
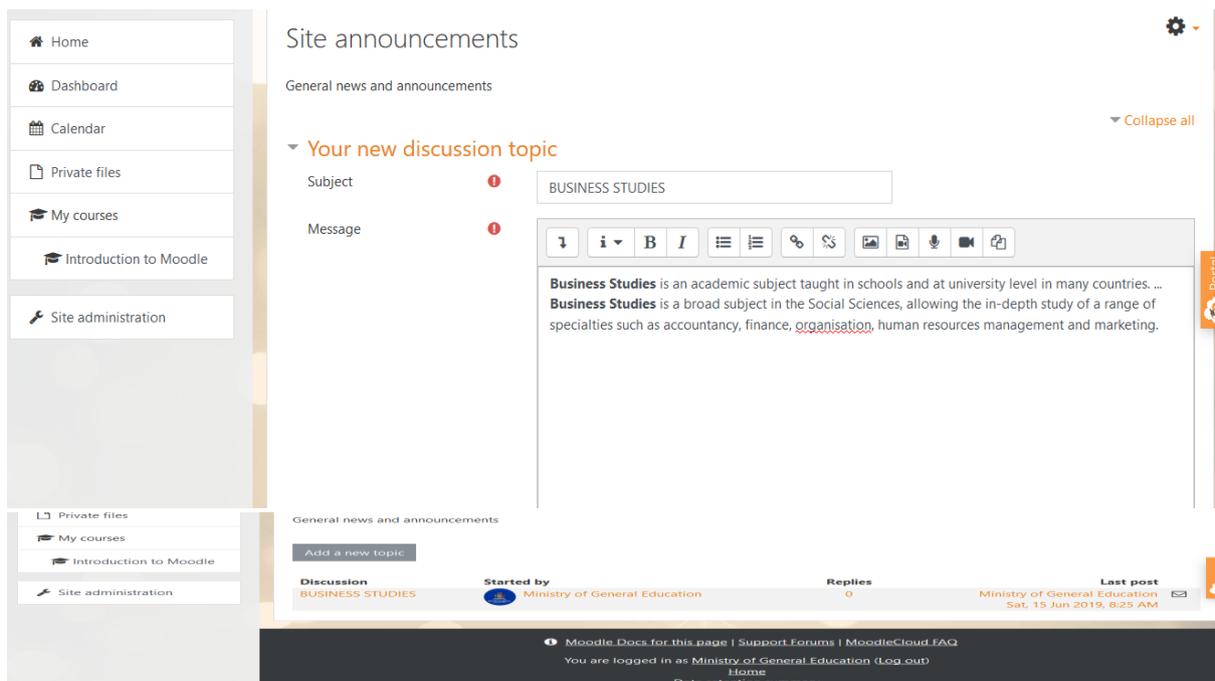
Add a new course

Home / Site administration / Courses / Manage courses and categories / Add a new course

Add a new course

▶ Expand al

▼ **General**

Course full name ❗ ❓ | Business Studies Grade 8

ENGLISH (EN) ▾ | USERS | STORAGE | 🔔 💬 Ministry of General Education

Course category ❓ | Miscellaneous ⇕

Course visibility ❓ | Show ⇕

Course start date ❓ | 16 ⇕ | June ⇕ | 2019 ⇕ | 00 ⇕ | 00 ⇕ 📅

Course end date ❓ | 15 ⇕ | June ⇕ | 2020 ⇕ | 00 ⇕ | 00 ⇕ 📅 ☑ Enable

Course ID number ❓ | [   ]

▼ **Description**

Course summary ❓

↴ | i ▾ | B | I | ≔ | ≣ | 🔗 | ✂ | 🖼 | 📄 | 🎤 | 🎥 | ⎘

Business Studies is an academic subject taught in schools and at university level in many countries. ...
Business Studies is a broad subject in the Social Sciences, allowing the in-depth study of a range of specialties such as accountancy, finance, organisation, human resources management and marketing.

▼ **Course format**

Format ❓ | Topics format ⇕

Number of sections | 15 ⇕

Hidden sections ❓ | Hidden sections are shown in collapsed form ⇕

Course layout ❓ | Show all sections on one page ⇕

▼ **Appearance**

Force language | Do not force

ENGLISH (EN) ▾ | USERS | STORAGE | 🔔 💬 Ministry of General E

| ⇕ | 3 ⇕

Show gradebook to students ❓ | Yes ⇕

Show activity reports ❓ | No ⇕

▼ **Files and uploads**

Maximum upload size ❓ | Site upload limit (100MB) ⇕

▼ **Completion tracking**

Enable completion tracking ❓ | No ⇕

▶ **Groups**

▶ **Role renaming** ❓

▶ **Tags**

[Save and display] [Cancel]

Turn Editing On when adding topic names and contents

Add a New User

▶ Expand all

General

Username   ❓

method

☐ Suspended account ❓

☐ Generate password and notify user

New password ❓   *Click to enter text* ✏ 👁

☐ Force password change ❓

First name ❗   Kabunene Primary

Surname ❗   School

Email address ❗   Kabuneneprimaryschool@gmail.cor

Email display ❓   Allow only other course members to see my email address ⬍

City/town   Solwezi

Select a country   Zambia ⬍

Description ❓

Kabunene Primary is located in Solwezi, Zambia. Company is working in Schools business activities.

User picture

Gravatar has been enabled for this site. If you don't upload a profile picture Moodle will attempt to load a profile picture for you from Gravatar.

Current picture   None

☐ Delete picture

New picture ❓   Maximum size for new files: Unlimited, maximum attachments: 1, overall limit: 199.8MB

ENGLISH (EN) ▾   USERS   STORAGE

You can drag and drop files here to add them.

Accepted file types:

Image files used on the web .gif .jpe .jpeg .jpg .png .svg .svgz

Picture description

▶ Additional names

▶ Interests

▶ Optional

Create user   Cancel

III. ADMIN QUICK GUIDE

A. *Setting up the front (home) page*

1. If you're using the Boost theme, click the gear menu top right of the front page and then click 'Edit settings'. Alternatively, click 'Edit settings' from the Administration block on your front page.

2. Change the full name and short name if needed. (The short name shows in the navigation bar.)

3. Decide what should be shown on the front page - news items, courses, course categories or none of these things? The same or different for logged in and non-logged in users? As for other settings, they can always be changed later.

To add text and/or images to the central area of the front page

1. Click 'Turn editing on' either from the gear menu (Boost theme) or the Administration block for other themes.

2. Click the configuration icon (cogwheel) near the top of the screen. (If you don't see this, check in *Site administration > Front page > Front page settings* that 'Include a topic section' is ticked.)

3. Add text and/or images to the summary box.

Note: If you don't want to use your front page for displaying courses or information about your organisation, you can display the log in page only by checking "force login" in *Site administration > Security > Site security settings*.

B. *Changing the look of your site*

- A new Moodle site comes with a default Boost theme and two other standard themes,

'Clean' and 'More'. All work well on mobile devices as well as desktops, and the 'Boost' and 'More' themes are designed to be easily customisable from the Themes area of Site administration.

- Find out how to add dropdown menus, footer links, Google Analytics and more in Site appearance.

- If your installation and organisation allow it, you can install a custom theme. See installing plugins for details.

C. *Adding courses*

- Courses are Moodle's learning areas, where teachers and students work together.

- You may add a new course by clicking the 'Add a new course' button on the front page or from the Manage courses and categories link in the Courses area of Site administration.

- If you plan to have many courses, you can upload courses in bulk via CSV file.

- If you want certain settings in your courses to be always pre-set for you when you make a new course, check out *Site administration > Courses > Course default settings*.

- Overview of adding users

- *Step 1: Authentication*

- Everyone using your site must have an account. You can allow people to create their own account using Email-based self-registration, or add new users individually or bulk create accounts via CSV file or choose from a number of other authentication methods.

- For more information, see Managing accounts and Authentication.

- **Note:** You do not yet decide who will be a teacher, student or other type of participant. If you're wondering why, read the documentation on Assigning roles.

- *Step 2: Enrolment*

- Once users have an account, they need to be enrolled in courses. (Now is the time to give them their student, teacher or other role.) You can allow them to self enrol, or you can enrol them manually yourself or choose from a number of other enrolment methods.

- For more information, see Enrolments.

- **Note:** You can create accounts and enrol users in courses at the same time if you wish by uploading users or you can explore Cohorts, site or category wide groups.

D. *Important default site settings*

1. Set your default language in *Site administration > Language > Language settings*. Moodle defaults to common English; if you need US English or another language, add that in *Language > Language pack* first then you can set it as the default.

2. Set your default timezone and country in *Site administration > Location > Location settings*.

3. Turn off public Guest access (unless you are sure you know how to use it) in *Site administration > Plugins > Enrolments > Manage enrol plugins* and Hide its button in *Site administration > Plugins > Authentication > Manage authentication > Guest login button*.

4. Adjust your minimum password if you need to in *Site adminstration>Security > Site security settings > Password policy*.

5. Verify that cron is running when you set that up during install. Your site will not work properly without it. If the message "The cli/cron.php maintenance script has not been run for at least 24 hours." shows up in *Site administration > Notifications* then it is not running properly.

E. *Admin tips and tricks*

- Go through each activity in *Administration > Site administration > Plugins > Activity modules* and decide the most suitable default settings for your Moodle. Do the same for the gradebook, via *Administration > Site administration > Grades > General settings*.

- Go to *Administration > Site administration > Advanced features* and review whether you want to make use of additional features such as blogs, RSS feeds, completion tracking (for both Activity completion and Course completion), conditional access, portfolios or badges.

- Consider enabling your site for Mobile app access via *Site administration >Mobile app>Mobile settings"*

- Provide the user interface in different languages by installing additional language packs via *Site administration > Language > Language packs.*

- Use wording more suitable to your users by changing Moodle's default terms in *Administration > Site administration > Language > Language customisation*.

IV. TEACHER QUICK GUIDE

A. *Course set up*

A course is a space on a Moodle site where teachers can add learning materials for their students. A

teacher may have more than one course and a course may include more than one teacher and more than one group of learners. See the screencast what is a course? or if your course looks different, watch this alternative screencast.

By default a regular teacher can't add a new course. See Adding a new course for information on how courses may be created.

A course can display its materials in a number of ways or 'formats', for example in weekly sections or named topic sections. You can show all the sections at once or just reveal one at a time. See Course settings for more information, or watch the screencast How to lay out a course. If your course looks different, watch this alternative screencast.

Course sections may be renamed by turning on the editing and clicking the configuration icon underneath the section name. Sections may also be moved by drag and drop and sections added or removed by clicking the + or - underneath the bottom section. See Course homepage for more information.

You can also add elements, known as 'blocks', to the right, left or both sides of your central learning area, depending on your theme. For more information see Blocks. Remember that blocks will not display in the Moodle Mobile app so, think carefully about which blocks you really need.

B. Course enrolment

Before a learner can access your course, they must first be authenticated on the site and that is the responsibility of the site administrator.

Enrolment methods

There are several enrolment methods available to a teacher, what is available, again, depends on the site administrator. The admin might enrol students into course automatically, or the teacher might be able to let students enrol themselves. Depending on the theme used, this can be done either by clicking the gear menu in the nav drawer link **Participants** or by clicking **Enrolled users** from the **Users** link in the **Course administration** block. This is the Manual enrolment method. Other options can be seen in the **Enrolment methods** link and include Self enrolment and Guest access.

> **Note:** Guests can only view the course and its resources; they cannot participate in any activities.

An enrolment key may be set if Self enrolment is enabled so that only students with the key can enter. The screencast Enrolling learners gives more information on course enrolment. If your course looks different, watch this earlier screencast on Enrolling learners .

C. Grading

Every course has its own Gradebook which can record scores from assignments , quizzes , peer assessment workshops, 'branching' lessons, SCORM activities and LTI learning resources.

The grader report

Other activities such as forums, databases and glossaries can have ratings enabled which will also then be reflected in the gradebook.

Grade items can be manually created from *Course administration > Grades > Set up > Categories and items* and it is also possible to import and export grades.

D. Tracking progress

If completion tracking has been enabled for the site and in *Course administration > Edit settings*, you can then set completion conditions in activity settings. A checkbox will appear next to the activity and a student may either be allowed to tick it manually, or a tick will display once criteria for that

particular activity have been met. This feature can be combined with Course completion so that when certain activities have been completed and/or grades obtained, the course itself is marked complete.

V. USER QUICK GUIDE

A. Your profile

You can access your profile from the user menu top right. It's where you see your name and an arrow. Click there *(1)* to open up the menu *(2)* Clicking the Profile link will then display other options, such as a list of your courses, any forum and blog entries and a link to edit your profile (3).

Your profile page

Clicking the Edit profile link will allow you to change certain information such as your correct timezone, add an avatar, description and, optionally, extra contact details. You cannot normally change your username and your admin might have restricted other changes too.

When you upload an image, it will appear in the user menu by your name and also on your Dashboard page.

B. Your notifications and messages

Your site can alert you when you have new messages from your teacher and other participants. You can receive alerts about new forum posts or graded assignments and more.

You can receive these alerts via email or pop up, and you can control how you receive them from *Preferences > Message preferences* in the user menu. The documentation Messaging gives more detail.

Sending a message

If your Moodle admin has set the site up for the mobile app, you can also receive alerts on your mobile phone. See Moodle Mobile for more information.

C. Your courses

How you find courses depends on how the administrator has set up the site.

Site front page - Some sites display all their courses on the front page and students click to enrol themselves into a course. When you are logged in, some site front pages may display only the courses you are enrolled in (to avoid clutter and confusion).

List of available courses

Dashboard - This is your personal page which you can customise and view your enrolled courses and outstanding tasks. More information in the section below.

D. Your dashboard

Every user has their own dashboard which they can customise. The screencast **Dashboard** gives a brief introduction to this, and the documentation on **Dashboard** gives further information.

Your dashboard

You can access your dashboard quickly, from the user menu top right and your site may redirect you automatically to your dashboard once you are logged in.

VI. USER INTERFACE DESIGN

It is essential to consult the system users and discuss their needs while designing the user interface.

USER INTERFACE SYSTEMS CAN BE BROADLY CLASSIFIED AS:

➢ User initiated interface the user is in charge, controlling the progress of the user/system dialogue. In the computer initiated interface, the computer selects the next stage in the interaction.

➢ Computer initiated interface, in the computer initiated interfaces the computer guides the progress of the user/system dialogue. Information is displayed and the user response of the computer takes action or displays further information.

USER INITIATED INTERFACES

User initiated interfaces fall into two approximate classes:

➢ Command driven interfaces: in this types of interface the user inputs commands or queries which are interpreter by the computer.

➢ Forms oriented interfaces: the user calls up an image of the form to his/her screen and fills in the form. The form oriented interface is chosen because it is the best choice.

COMPUTER INITIATED INTERFACES

The following computer initiated interfaces were used:

➢ The menu system for the user is presented with a list of alternatives and the user chooses one; of the alternatives.

➢ Questions – answer type dialogue system where the computer asks questions and takes action on the based on the basis of the user reply.

Right from the start the system is going to be menu driven, the opening menu displays the available options. Choosing one option gives another popup menu with more options. In this way every option leads the user to data entry form where the user can key in the data.

ERROR MESSAGE DESIGN:

The design of errors is an important part of the user interface design. As users is bound to commit some errors, therefore while designing a system the system should be designed to be helpful by providing the user with information regarding the error he/she has committed.

CHAPTER FOUR RESULTS
1. INTRODUCTION

Most current Head teachers 2019 and below call themselves, BBC meaning Born Before Computers brush away these innovations and consider them expensive, challenging to their offices, duping or mere academic exercise. They are slowly accepting that ICT has come to stay.

Networks are making greater in roads into schools than ever before? The answers are many and varied, but most teachers agreed that networks offer them the following advantages:

- Creating space in departments
- They eliminate the handling of storage media such as CDs and flash disks
- They cut down on computer printouts, making it possible for teachers' work to be viewed on-screen.
- They support management programs that give teachers detailed reports on a student's progress, even pointing out areas where improvement is necessary.
- They allow several teachers in a school to use one program at the same time.
- They eliminate the need to buy several copies of one software program, thereby often reducing costs
- Responsibility is easily placed.
- Effective use of equipment, supplies and space.
- All related data kept together.
- Uniform service provided to all users.

Although electronic data is extremely efficient , it is not without disadvantages, these include data corruption, data theft and an authorized editing and loss of data in case of an attack by viruses deliberate deleting of data.

2. BASELINE STUDY RESULTS
I. SURVEY RESULTS AND DISCUSSION

Here X1 is treatment with Web based e-learning, X2 is treatment with Non-web-based e-learning, X3 is treatment with Chart, X4 is treatment with Chalk Talk.

Table II: Data for Calculating Average gain and Analysis of Variance (ANOVA)

1st group X1	(X1)2	2nd group X2	(X2)2	3rd group X3	(X3)2	4th GrouP X4	(X4)2
65	4225	61	3721	52	2704	19	361
37	1369	37	1369	28	784	41	1681
63	3969	59	3481	50	2500	20	400
41	1681	43	1849	26	676	42	1764
64	4096	58	3364	50	2500	21	441
48	2304	41	1681	25	625	40	1600
64	4096	61	3721	53	2809	21	441
41	1681	38	1444	24	576	41	1681
65	4225	62	3844	48	2304	20	400
39	1521	41	1681	28	784	42	1764
64	4096	60	3600	29	841	20	400
38	1444	48	2304	37	1369	42	1764
67	4489	60	3600	49	2401	23	529
47	2209	36	1296	38	1444	39	1521
65	4225	62	3844	49	2401	24	576
49	2401	42	1764	27	729	37	1369
68	4624	41	1681	51	2601	22	484
40	1600	39	1521	29	841	36	1296
50	2500	66	4356	52	2704	22	484
53	2809	33	1089	34	1156	34	1156
67	4489	60	3600	51	2601	26	676
39	1521	37	1369	36	1296	33	1089
66	4356	58	3364	53	2809	21	441
37	1369	49	2401	31	961	39	1521
65	4225	57	3249	50	2500	23	529
∑X1=1342		∑ X2=1249		∑ X3=1000		∑ X4=748	

$\sum(X1)^2$ =75524	$\sum(X2)^2$ =65193	$\sum(X3)^2$ =40000	$\sum (X4)^2$ =24368

$\sum$ X=$\sum$ X1+$\sum$ X2+$\sum$ X3+$\sum$ X4

$\sum$ X =1342+1249+1000+748

$\sum$ X = 4339

$\sum(X)^2 = \sum (X1)^2 + \sum (X2)^2 + \sum (X3)^2 + \sum (X4)^2$ $\sum(X)^2 = 75524 + 65193 + 40000 + 24368$

$\sum(X)^2 = 205085$
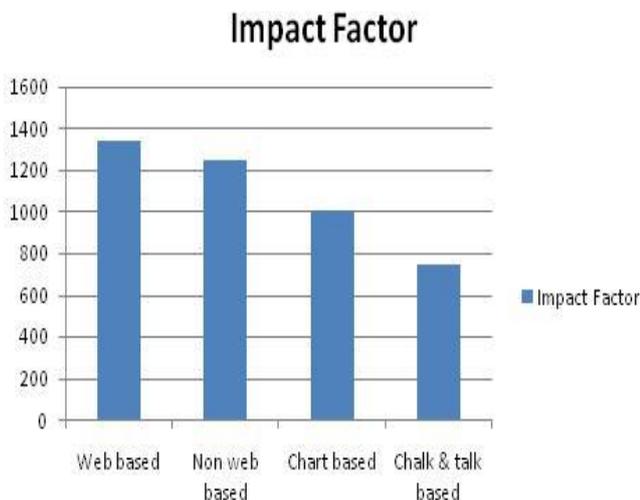
Impact Factor

Fig 1. Impact Factor of Various Learning Methods

Table III: Average Gain Score of The Pupils' Performance In The Test

Instructional media	Pretest score in %	Posttest score in %	Average gain score	Ranking
Web based e-learning	23.37	79.05	55.68	1st
Non-Web based e-learning	22.94	74.9	51.96	2nd
Chart	22.2	64.2	42	3rd
Chalk Talk Method	22.53	54.45	31.92	4th

The mean average gain score, which is the difference between the pretest and the posttest, was computed for the four treatment groups. The web based e-learning group is slightly higher than the Non-web based e-learning group (55.68

% and 51.96 % respectively). The chart group scored 42 % while the Chalk Talk Method group scored 31.92%. This result in table IV confirms that web based e-learning can be effective in teaching student varying subject matter.

Table IV:Test of Significance UsingAanalysis of Variance (ANOVA) of theAverage Gain Scores of the Four Groups

Source of variance	Sum of Square (SSx)	Degree of freedom Dfx	Variance estimate MSx	F cal	F tab (p< 0.5)	Remarks
Between Group (x=b)	8549.55	3	2849.85	24.47	2.76	There Is significic Ant differen Ce
Within Group (x=w)	11182.24	96	116.48167			
Total(x=t)	19731.79					

3. SYSTEM IMPLEMENTATION RESULTS

Table IV shows that the F cal of 24.47 is greater than the F tab of 2.76 at alpha 0.05. Hence, the Null Hypothesis (H0) may be rejected. This implies that there is a significant difference amongst the four mean average gain scores of the pupils taught with varying methods.

In this paper we have design a Web Site/Portal, in this portal consist of user who has access to services, repositories and database through an interface. In e-learning scenario and specifies

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details of services in the e-learning domain. In this web based portal, the first step would be registering each user, and the service provider allows communication between service provider and requesters. Services interact resources and, in particular, subscribe to relevant ontologies. Other resources include database and documents published in the web site. Portal might be include services such as answer –questioning ,lessons, subject materials, feed back system and a services to help students improve their knowledge.

4. SUMMARY

The semantic web comes with new emerging standards based on evolving Web technologies, which allow the reuse of material in different contexts, flexible solution, as well as robust and scalable handling. Through the Web technology we are providing following features, that shows the effectiveness of the web based e-learning system:-

1. Creation of new user account.
2. Providing user rights.
3. Making the content visible for all user.

4. Providing SMS facility for acknowledgement of messages receiving/sending.
5. Providing upload/download facility of the notes/lessons.
6. Providing answer to learners' question
7. Promoting discussion through messages or forum

8. Providing feed back and survey facility.

CHAPTER FIVE: DISCUSSION AND CONCLUSION

1. INTRODUCTION

IT is one of the effective tools to accelerate the learning process in highly customized manner. The surveys will be conducted here indicate that the base technology and infrastructure to provide effective functionality are critical for successful implementation of the adopted e-Learning model.

2. DISCUSSION

II. THE BASELINE STUDY

Various institutions maintain a variety of training resources to ensure a basic level of proficiency. The result of the surveys highlights the need of knowledge-based approach to achieve the advantages like effective retrieval and presentation, identifying users need, evaluation of users responses, and explanation and justification of the systems own decisions made to achieve high degree of quality. Based on the findings of this study, it is concluded that e-learning tools/models help teachers in effective teaching as compared to traditional/conventional teaching methods. It is further clarified that the use of Web Based e-learning in teaching college pupils is as effective as when the teacher uses the Non-Web Based e-learning system in teaching. The use of e-learning tools is more effective as compared to traditional learning system. And it will be proved by taking some parameters like availability of material, availability of teacher and evaluation data analysis we find out the performance will be increasing in the web based e-learning system up to 24.47 percent.

III. USE OF TECHNOLOGY

Online learning opportunities and the use of open educational resources and other technologies can increase educational productivity by accelerating the rate of learning; reducing costs associated with instructional materials or program delivery; and better utilizing teacher time.

ONLINE LEARNING: This currently support online learning opportunities that range from supplementing classroom instruction on an occasional basis to enrolling students in full-time programs. These opportunities include dual enrollment, credit recovery, and summer school programs, and can make courses such as Advanced Placement and honors, or remediation classes available to students. Both core subjects and electives can be taken online, many supported by online learning materials.

ONLINE SCHOOLS: The following online or virtual schools enroll students on a full-time basis. Students enrolled in these schools are not attending a bricks and mortar school; instead they receive all of their instruction and earn all of their credits through the online school.

BLENDED LEARNING: Blended learning opportunities incorporate both face-to-face and online learning opportunities. The degree to which online learning takes place, and the way it is integrated into the curriculum, can vary across schools. The strategy of blending online learning with school-based instruction is often utilized to accommodate students' diverse learning styles and to enable them to work before or after school in ways that are not possible with full-time conventional classroom instruction.

OPEN EDUCATIONAL RESOURCES: Open educational resources are teaching, learning, and research resources that reside in the public domain and are freely available to anyone over the Web. They are an important element of an infrastructure for learning and range from podcasts to digital libraries to textbooks and games. It is critical to ensure that open educational resources meet standards of quality, integrity, and accuracy as with any other educational resource and that they are accessible to students with disabilities.

USE DIGITAL RESOURCES WELL: Schools can use digital resources in a variety of ways to support teaching and learning. Electronic grade books, digital portfolios, learning games, and real-time feedback on teacher and student performance, are a few ways that technology can be utilized to power learning.

IV. DEVELOPMENT OF THE *SYSTEM* AS A SOLUTION

Be it self-learning, peer-to-peer interaction or virtual education with the help of a trainer, custom elearning development has minimised barriers, benefiting both learners as well as educators. 74% of employees in businesses using custom elearning solutions have a BYOD (bring your own device) policy and 97% of employees claimed that a tablet adoption policy increased their learning effectiveness. With all the progress and brainstorming that happens in this field, the competition is tremendous and ever-increasing. With every passing day, companies and individuals are coming up with more and more ideas and the potential market is getting smaller as entry becomes more difficult, which is why it's so important to develop your idea right away and stay ahead of the competition.

1. **Single Sign-On**

We all go through the pain of trying to remember passwords. This is because we probably have more than 30 accounts for 30 different applications. Say, Hello! to Single sign-on (SSO)!!! Most organizations are comfortable with SSO and your custom elearning development solution should plug in that, too.

2. **Ease of access**

Our race has been conditioned to think that if its a computer program, it will be hard to use. More often than not, programs are just unnecessary complex, maybe because of its complicated design and tons of unnecessary features and bad user interface choices. Avoid making these mistakes.

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3. **Learner-centric and relevant education with a personalized touch**

With the unimaginable student-teacher ratio, it is quite difficult to provide individualised course content to a class, when especially there are 20–30 students in each batch. Same, for corporate training.

4. **Dashboards and Built-in Reporting**

Reporting is an important part of any custom elearning development solution as it offers deep insights into how effective the assessment and training strategy is and how well that strategy is being implemented to meet your outcome goals and objectives. Similarly, users should have access to their own dashboard and reports to gain a better visualization of their progress, their areas of strengths and weakness through a mix of reports and assessments.

V.COMPARISON WITH OTHER SIMILAR WORKS

E. e-Learning and Classroom Learning

e-Learning option allows the students to learn the course without moving out of their place whereas they have to compulsorily attend the traditional classrooms for learning in the classroom learning option.

F. e-Learning and Blended Learning

Blended learning is a combination of traditional classroom learning and virtual learning by using a video conferencing tool whereas e-Learning involves only internet connection for learning any course. In order to choose the best learning method, you will have to compare the pros and cons of e-Learning vs blended learning.

VI. POSSIBLE APPLICATION
3. SUMMARY

Web based learning offers huge opportunities for learning and access to a vast amount of knowledge and information. The role of teachers is to ensure that the learning environment provided takes account of learners' needs and ensures that they are effectively prepared and supported. Online learning has advantages, but web based learning should not always be viewed as the method of choice because barriers (such as inadequate equipment) can easily detract from student learning. The technology must therefore be applied appropriately and not used simply because it is available and new or because students and teachers have particular expectations of this means of course delivery.

4. CONCLUSION

In conclusion, there is a growing body of research that examines social contexts created through digital environments. Research on computer-supported collaborative learning has not only shown that computer based collaboration can enhance higher-order learning, but has identified particular program designs and features which support specific kinds of external constructions of knowledge in relation to online learning environments. In the online learning domain, research on computer-mediated communication has found online class discussions even through Moodle to be more equitable and democratic and more reflective than traditional classroom discussion, and has documented links between online interactions and learning. Interesting research in this area also links specific design features to particular discourse behaviours, and particular online teaching behaviours to student learning and course satisfaction. Technology which is the systematic application of techniques and principles of science are to be used to achieve an objective effectively and efficiently. As a field of study, educational technology emphasizes communication skills and approaches to teaching

and learning through the judicious use and integration of diverse media. Practitioners in educational technology seek new and effective ways of organizing the teaching-learning process through the best possible application of technological developments such as Moodle. These activities rely upon a body of knowledge for successful and ethical implementation, rather than as routine.

5. FUTURE WORKS

In future, more features need to be added to this system such as wikis, quiz, etc., among other plugins to completely engage the learners on educational matters using ICTs in secondary schools, according to the national curriculum standards.

This work proposed a prototype for a simple, customized, learner-oriented system to facilitate the learning process. This system is composed of a web-based e-learning system in which the guest can navigate freely within the system. If a student is to study a specific course, he should be registered. A registration screen is opened automatically, and after registration an email is sent to him with the login username and password. Only those who login correctly can invoke the course, follow the course activities, collaborate with other students, discuss with the tutor, download assignments, carry out self tests, and join exams. The prototype of the proposed e-learning platform is developed on the Microsoft Active Server Pages technology and can be used in any network based on a Windows Server.

The database is created with SQL SERVER 2000 Application. Furthermore, the proposed system has been developed considering learning management as well as course content

management. The system prototype as well as the course "Computer Architecture & Organization" designed following the SCORM standard are now available for the students to examine and evaluate. The system assessment will be carried out at the end of this semester, and enhancements will be proposed.

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Appendix

```javascript
JavaScriptfile//renderprocess.js
$(document).ready(function(){
//SubmitTransaction
$("#submitTransaction").click(func
tion(event){
event.preventDefault();
$.ajax({
url:"AddData/process.php",
method:"POST",
data:$("form").serialize(),
success:function(data){
$("#message").html(data);
}
})
});
//AdminAdd
$("#adminCreate").click(function(e
vent){
event.preventDefault();
$.ajax({
url:"AddData/admincreate.php",
method:"POST",
data:$("form").serialize(),
success:function(data){
$("#Admin_msg").html(data);
}
})
});
//EditTransaction
$("#EditTran").click(function(even
t){
event.preventDefault();
varpaye_name=$("#paye_name").v
al();
varcheqNum
=$("#cheqNum").val();
vardetails=$("#details").val();
varamount=$("#amount").val();
varaccountCode=$("#accountCode
").val();
vartranID =$(this).attr("tranID");
varcategory=$("#category").val();
//alert(category);
$.ajax({
url:"action.php",
method:"POST",
data:{EditTran:1,paye_name:paye_
name,cheqNum:cheqNum,details:d
etails,amount:amount,category:cate
gory,accou
ntCode:accountCode,tranID:tranID
},
success:function(data){
$("#message").html(data);
}
})
});
//PassedTransaction
$("#PassedTransaction").click(func
tion(event){
event.preventDefault();
//alert("YouPressedMe");
$.ajax({
url:"AddData/passedTran.php",
method:"POST",
data:$("form").serialize(),
success:function(data){
$("#message").html(data);
Window.reload(true);
}
});
});
Transaction();
functionTransaction(){
$.ajax({
url:"action.php",
method:"POST",
data:{SelectTransaction:1},
success:function(data){
$("#selectedTran").html(data);
}
});
}
userView();
functionuserView(){
$.ajax({
url:"action.php",
method:"POST",
data:{viewUser:1},
success:function(data){
$("#ViewUsers").html(data);
}
});
}
Rejected();
functionRejected(){
$.ajax({
url:"action.php",
method:"POST",
data:{SelectRejTransaction:1},
success:function(data){
$("#selectedRTran").html(data);
}
});
}
UnproccedTransaction();
functionUnproccedTransaction(){
$.ajax({
url:"action.php",
method:"POST",
data:{unproceed:1},
success:function(data){
$("#UnproceedTran").html(data);
}
});
}
unrevenue();
functionunrevenue(){
$.ajax({
url:"action.php",
method:"POST",
data:{unrevenue:1},
success:function(data){
$("#unprocessedRevenue").html(da
ta);
//alert(data);
}
});
}
Processed();
functionProcessed(){
$.ajax({
url:"action.php",
method:"POST",
data:{processed:1},
success:function(data){
$("#processed").html(data);
}
});
}
```

```
//ProceeingTransaction();
//functionProceeingTransaction(){
// varid=$(this).attr("referenceIA");
// $.ajax({
// url:"action.php",
// method:"POST",
// data:{processing:1,AccCode:id},
// success:function(data){
// $("#processing").html(data);
// }
// });
//
//}
//changestatusofuser
$("body").delegate("#deleteTran","
click",function(){
varid=$(this).attr("deleteItem");
//alert("Youhaveclickedon"+id);
$.ajax({
url:"action.php",
method:"POST",
data:{Delete:1,ItemID:id},
success:function(data){
//alert(data);
$("#notifica").html(data);
//alert(data);
Rejected();
Transaction();
}
});
});
//id='transferIA'referenceIA='$acco
untCode'
//change
$("body").delegate("#transferIA","
click",function(){
varid=$(this).attr("referenceIA");
//alert("Youhaveclickedon"+id);
$.ajax({
url:"action.php",
method:"POST",
data:{referenceTrans:1,referID:id},
success:function(data){
//alert(data);
$("#notifica").html(data);
Transaction();
Rejected();
```

```
//alert(data);
//Transaction();
//setTimeout(200,window.location.
href="AccTran.php");
}
});
});
$("body").delegate("#ProcessTrans
action","click",function(){
varaccontCod=$(this).attr("accontC
od");
//alert("Youhaveclickedon"+accont
Cod);
vartypeprocess="payment";
$.ajax({
url:"action.php",
method:"POST",
data:{process:1,accountCode:accon
tCod},
success:function(data){
if(data==true){
window.location.href="process.php
?AccCode="+accontCod+"&&"+"t
ypeprocess="+typeprocess;
}else{
alert("Error!!"+data);
}
}
});
});
$("body").delegate("#referaudit","c
lick",function(){
varaccontCod=$(this).attr("accontC
od");
//alert("Youhaveclickedon"+accont
Cod);
$.ajax({
url:"action.php",
method:"POST",
data:{ReferAI:1,accountCode:acco
ntCod},
success:function(data){
$("#msg_i").html(data);
}
});
});
```

```
$("body").delegate("#processReven
ue","click",function(){
varaccontCod=$(this).attr("accontC
od");
vartypeprocess="revenue";
//alert("Youhaveclickedon"+accont
Cod);
$.ajax({
url:"action.php",
method:"POST",
data:{Revenueprocess:1,accountCo
de:accontCod},
success:function(data){
if(data==true){
window.location.href="process.php
?AccCode="+accontCod+"&&"+"t
ypeprocess="+typeprocess;
}else{
alert("Error!!"+data);
}
}
});
});
$("body").delegate("#rejectTrans","
click",function(){
varreID=$(this).attr("reject");
//alert("TransactionRejected"+reID
);
//alert("TransactionRejected");
$.ajax({
url:"action.php",
method:"POST",
data:{RejectTransaction:1,refID:reI
D},
success:function(data){
//alert(data);
$("#message").html(data);
//alert(data);
//setTimeout(1,10000,window.locat
ion.href="AccTran.php");
}
});
});
$("body").delegate("#moreD","clic
k",function(){
vardetailsID=$(this).attr("detailsID
");
```

```
//$("#displayInformation").html(detailsID);
$.ajax({
url:"action.php",
method:"POST",
data:{DetailedTransaction:1,FileID:detailsID},
success:function(data){
//alert(data);
$("#displayInformation").html(data);
}
});
});
//checked
$("body").delegate("#checked","click",function(){
//check='$rid'id='checked'
varrid=$(this).attr("check");
$.ajax({
url:"action.php",
method:"POST",
data:{checkRevenue:1,rid:rid},
success:function(data){
$("#msg_i").html(data);
//window.location="review.php";
revenue();
}
});
});
//checked
$("body").delegate("#cptr","click",function(){
varidic=$("#idic").val();
//varaccountcode=$("#accountcode").val();
varp1=$("#p1").val();
varc1=$("#c1").val();
varp2=$("#p2").val();
varc2=$("#c2").val();
```

```
varp3=$("#p3").val();
varc3=$("#c3").val();
varp4=$("#p4").val();
varc4=$("#c4").val();
varp5=$("#p5").val();
varc5=$("#c5").val();
varp6=$("#p6").val();
varc6=$("#c6").val();
varp7=$("#p7").val();
varc7=$("#c7").val();
//alert(idic);
$.ajax({
url:"action.php",
method:"POST",
data:{procePayment:1,paymentID:idic,p1:p1,c1:c1,p2:p2,c2:c2,p3:p3,c3:c3,p4:p4,c4:c4,p5:p5,c5:c5,p6:p6,c6:c6,p7:p7,c7:c7},
success:function(data){
$("#message").html(data);
//window.location="review.php";
}
});
});
//revenuedispaly
revenue();
functionrevenue(){
$.ajax({
url:"action.php",
method:"POST",
data:{viewRevenue:1},
success:function(data){
$("#viewRevenue").html(data);
}
});
}
//checkRevenue
checkRevenue();
functioncheckRevenue(){
```

```
$.ajax({
url:"action.php",
method:"POST",
data:{vcheckRevenue:1},
success:function(data){
$("#checkRevenue").html(data);
//revenue();
}
});
}
//transRevenue
transRevenue();
functiontransRevenue(){
$.ajax({
url:"action.php",
method:"POST",
data:{viewtransRevenue:1},
success:function(data){
$("#transRevenue").html(data);
}
});
$("#createCode").click(function(event){
event.preventDefault();
varcode=$("#accountCode").val();
vardesc=$("#desc").val();
vartypecode=$("#typecode").val();
//alert(typecode)
$.ajax({
url:"action.php",
method:"POST",
data:{insertCode:1,code:code,desc:desc,typecode:typecode},
success:function(data){
$("#message").html(data);
}
});
});
});
```