

A Study of Understand the Concept of Web-Based Education

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Abstract - Technology's long-term impact on the classroom cannot be overstated. Web-based learning is a prime illustration of the widespread importance of websites. Several crucial functions of the Internet in today's educational contexts include information provision, communication facilitation, creative space provision, and the delivery of teaching. Online resources are becoming more valuable in the classroom nowadays and the study in which discussed about Web Based Learning, Education and Technology, Models of Web-Based Education, Benefits of web-based education, Drawbacks of web-based education, Web Technologies and Tools Designed For E-Learning Applications, Web-Based Programming Environments

Keyword - Web-Based Education, Learning

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INTRODUCTION

In a web-based learning environment, educators must make an effort to stimulate and maintain student motivation via the design of efficient interactions. This is necessary to properly engage students in active learning and promote sufficiently strong mental effort. Because of their distinctive screen designs or the inclusion of elements like animation and noises, several interactive programmes available online may initially catch students' interest. However, unless the interactions are created to be cognitively engaging, students may get bored and uninspired. This study's goal was to investigate how a Web-LE on fossilization affected the science students' motivation in tenth grade. Since it comprises material from an online course, virtual education, often known as e-learning, is also known as Web-based education. There are options for online discussion groups using email, video conferencing, and live (streaming) courses. Websites that are static, such as textual course materials, may also be a part of web-based programmes. The prospect of linkages to other parts of the web, which would provide access to a broad variety of online-based information, is one benefit of utilizing the site to access course material. A virtual learning environment, also known as a Managed Learning Environment, is a computer application that combines teaching and learning. A virtual learning environment often includes elements like discussion boards, chat rooms, online testing, site monitoring, and course administration. Like any other learning environment, a virtual learning environment functions by distributing information to learners. For instance, a virtual learning environment

can enable students to collaborate and share project-related information.[1]

Web Based Learning

Web-based education organizes subject matter as hypertext documents on the Internet, display of not only text, but also, for example, graphics, videos, or audios, which have many pedagogical advantages. This multimedia capability permits much more flexibility in the delivery of instruction by individuals selecting hypertext links, thus allowing the nonlinear interaction with information. This innovative technology can be used to complement customary instruction, or to provide complete courses over the Internet, especially the sciences and mathematics, which employ many symbols, simulations, and graphics. The Web is a collection of cross-linked, usually graphical 'pages' stored on computers around the globe, for providing friendly direct-manipulation interfaces for, or 'point-and-click' access to, worldwide sites discovered via browsing programs, e.g. Netscape's Navigator, and search engines, e.g. Yahoo!. With its implicit hypermedia design, the Web represents an innovative means of structuring and presenting online instruction, because it can simultaneously serve as delivery medium, content provider, and subject matter. Hypermedia refers to online settings where networks of multimedia nodes connected by links are used to present information and manage retrieval. Nodes containing texts, graphics, videos, audios, animations, models, simulations, visualizations, are accessed and viewed by interactive browsers, e.g. Microsoft's Internet

Explorer. Although connectivity among nodes is constrained by the design of the specific network-based educational environment, the student ultimately determines navigational paths through the nodes, by freely controlling the movement among nodes, according to intrinsic interests and present goals. "ever expanding network of nodes and links", courseware developers can create representational maps, i.e. Web pages, to guide students through customary knowledge domains. The fanciest Web site can be entirely ineffective for facilitating learning, if it is not based on sound design principles extrapolated from well-substantiated instructional theory. Possible links to Web pages, not produced by developers themselves, enable almost an infinite expansion of instruction; however, they are out of teacher control, and under direct learner control. By employing the Cognitive Edibility Theory and hypermedia of the Web, the instructional designer is in control, by creating nonlinear multidimensional paths traversing the subject matter, to provide multiple perspectives of the content, in order to guide student acquisition. Nevertheless, because of this hypermedia environment, individual learners are able to control their own paths through complex subject matter, independently of the guidance provided by the courseware designer.[2]

Web-based learning encompasses all educational interventions that make use of the internet (or a local intranet). There are currently three broad classifications or configurations within WBL: tutorials, online discussion groups, and virtual attainments. The distinctions between these configurations are often blurred, and in fact a given WBL intervention might use a combination of two or three, but the implications for teaching warrant a conceptual, albeit at times arbitrary, separation. Online tutorials are similar to face-to-face lectures. They generally consist of information structured by the teacher in a way that will (hopefully) facilitate learning. Tutorials are often enhanced by features such as multimedia (sound, pictures, movies, and animations), links to online resources (full-text journal articles or related websites) and other areas within the course, and self-assessment tools.[3]

The Internet vs. the Web

- Internet: "The world's largest computer network made up of millions of computers. It's really nothing more than the 'plumbing' that allows information of various kinds to flow from computer to computer around the world."
- Web: "One of many interfaces to the Internet, making it easy to retrieve text, pictures, and multimedia files from computers without having to know complicated commands."
- Other Internet protocols and interfaces include e-mail, chat rooms and bulletin boards, internet mailing lists, newsgroups, and databases accessed via Web interfaces.

Education and Technology

The word 'technology' means research being applied to the sciences. In recent years, the concept of technology has evolved. It is a modern sector of education discipline. Two terms of education and technology are educational technology. We develop technology while applying the science of teaching and communicating. The relation between education and technology is highlighted by three major factors.^[17]

Educational innovations aim to create, implement and validate technologies, strategies, and aids for developing human learning processes. Educational technology It can be conceived as a science of procedures, strategies, and advertising that can achieve instructional objectives. 'Technology of Education' can be described as the systemic application of scientific expertise to specific education tasks. It is a form of communication that results from the application of the scientific method of teaching/learning cognitive knowledge. The technology of education is used as both a means and a service for integrating and promoting improved and more efficient learning processes. In the educational philosophy, it can be described as a separate area in the creation and usage of educational resources.[4]

Models of Web-Based Education

There are several ways for developing and delivering web-based training. It can be considered a spectrum. "pure" distance education at one end (in which course material, assessment, and support are all delivered online, with no face-to-face contact between students and teachers).^[18] On the other hand, is an organizational intranet that replicates published web resources to facilitate what is a conventional course from one side to another. However, websites that are just content archives, without any connection to instruction, collaboration, and evaluation exercises do not focus on learners and cannot be called genuine web-based education courses.[5]

Characteristics of a traditional web course

- Class details, board notes, schedule
- Map of the software.
- Materials include slides, handbooks, posts
- E-mail and message forums communication
- Educational and summative evaluations
- Tools for college administration (records, statistics, student tracking)

- Links to helpful websites – library, public directories, and articles, for example.

The first phase in the development of a web-based course is to identify the students' interests and whether the students should be seen as a collective or as individual students. The website may be helpful means utilizing a medium of dialogue to get isolated students together in "virtual" communities. Web-based education programs include many online platforms.[6]

Benefits of web-based education

- Capacity to connect resources in various formats
- May provide course materials efficiently
- Resources from any place and at any time may be rendered accessible
- Widely accessible potential — for example, to part-time, advanced, or job-based students
- Will promote more autonomous and involved education
- Can provide traditional program a valuable source of supplementary content

Drawbacks of web-based education

- Students may have trouble accessing suitable computing equipment
- Learners are disappointing because of bad equipment they cannot view visuals, pictures, and video clips
- The facilities needed must be accessible and cost-effective
- The quality and accuracy of information will differ, so guidelines and signs are needed
- Students may feel lonely

Web Technologies and Tools Designed For E-Learning Applications

To optimize the study, the following years have come into focus: digital charts, dictionaries, and encyclopedias (wikis) educating films, electronic books, exams, tutorials, software for simulations, computer labs.

To be users' appealing and to comply with the newly accessible Web browsers, our e-learning framework, used by professors at the University of Sibiu called the "International Education Management tool" (<http://edmtool.gotdns.com/>), has been created using the most up to date web technology. The application

runs on the server-side of the Microsoft network hosting the ISI application 7.5. The interactive Web sites, in combination with AJAX javascript technology, will be developed using ASP.NET (.aspx) server pages in the context of the AJAX Control Toolkit library controls. The application's storage is connected with the Microsoft SQL Server 2008 R2, a sturdy and fast database host. The web application on the client-side has been designed such that it is accessible from every kind of common browser (it has been tested successfully on the following browsers: Internet Explorer, Google Chrome, Firefox, Safari, and Opera). Programmable Languages used include C# ASP.NET, FreeTextBox, FlashControl, and external artifacts like ASP.NET. The main page uses common libraries for JavaScripts such as Mootools and JQuery for slideshow and menu controller. During the Macromedia Flash trial, the third-party lessons about Binary Tree and Graph Theory were established.[7]

Via our research project, we achieve the stage of introducing joint proposals to share/implement research concepts or initiatives, teach something, anywhere, or deliver remote conference/courses with fellow students. Next, we introduce briefly some innovations and instruments that may offer motivation or solutions for further growth of the EDM Method. Zipcart is a strong and very recent platform to transform how webinars and webinars are held in the world. [19] This is Slideshare (<http://www.slideshare.net/>) a modern meeting platform, which enables users to hold cost-effective, safe private, and free web browser meetings. SlideShare also described how presentations should be shared on the internet and was the first web page where people can post PowerPoint and Keynote. The conferences take place completely through a browser window, are immersive and social. Any individual who has a SlideShare login [6] is provided with a private conference room with video uploading, audio, and community chat facilities (www.slideshare.net/USERNAME/meeting). The Zipcart Webconference framework is quick, easy, and social. Unlike previous online programs, the user can hold other window tabs open and invite people via IM (instant messaging), e-mail, or social networks to enter the URL of the conference space. To hold public hearings, each SlideShare recipient has free access to Zipcast. Additional features are included (a) removing ads, (b) private, password-protected, host-invited meetings, and (c) audio conferencing only.[8]

In addition to Zipcast, Microsoft provides very fascinating online display possibilities. Initially, it adopted the online demonstration model with its latest edition (Microsoft Office 2010), which allows PowerPoint to be launched with other customers, where a webserver is the customer's only necessity. In addition, online formats for Word, Excel, PowerPoint, and OneNote have been developed by Microsoft, meaning that users can build, update and exchange their documents from their web browsers

without needing to purchase the costly Office suite.

Web-Based Programming Environments

As stated, several applications to help teaching and learning to program are created. This segment discusses the programming environments built to encourage the learning of beginners to research and which have a significant influence on the ELP framework design and implementation. There are CodeSaw, CourseMaster, CodeLab, InSTEP, WebToTeach, and so on.

1. CodeSaw

CodeSaw is a digital online commercial workplace that offers a diverse atmosphere for technology students to relate new skills to a real experience. In a CodeSaw system residing on a CodeSaw server, the code snippets from an IT textbook are embedded. All these examples may be viewed, compiled, and executed without needing to install or type a software creation environment.

Students can log in to www.codesaw.com and install CodeSaw on their computers to utilize CodeSaw. Upon activation of CodeSaw students will display on the device homepage a selection of books sponsored by CodeSaw. To load the code into the CodeSaw framework you can click on any illustration, compile and run it. The software performance is provided for the learner after it has been compiled and executed on the server. Currently, C+, Java, Perl, Python, Ruby, XML, HTML, Mysql, SQL, PL/SQL, and JavaScript facilitates "instantaneous" learning. Students cannot change the code example for the new CodeSaw update.[9]

2. CourseMaster

CourseMaster is an enterprise-based programming client-server framework. The framework is an enhanced Ceilidh system variant. It provides the function to automatically evaluate the work of the students, identify plagiarism in student software, manage the results and provide solutions and teaching content. The system's labeling component will label Java, C++, Object-Languages, Flowcharts, and logical circuits.

Six instruments are used in the labeling scheme. The following are:

- A method that controls typographic interface software sources; a dynamic tool that measures the behavior of solutions by using the data for testing.
- A tool intended to inspect unique characteristics of the software of students;
- Flowchart methods that can be labeled by the use of a Dynamic tool to translate student

flowcharts to Better usability;

- Object-oriented tool for OO research and design checking the student OO diagrams;
- The device that replicates the logical circuits of students.

Student programs are examined for type design, required functionality and run against test data to perform the programming exercises. Students can get immediate reviews and findings. Feedback provides feedback about how the solution can be enhanced and connections for more reading. Teaching workers will set up the labeling system. You will decide when the markings are indicated at the numerical or alphabetic stage as well as the level of information in the comments.[10]

The ELP framework supports a variety of Java and C# programming languages, similar to CourseMaster. The ELP method provides students with input on both the consistency and the accuracy of its curriculum, compared to CourseMaster.

3. WebToTeach

1. WebToTeach is a computer science class web-based homework auto-checking application. It offers students a seamless experience with simple programming elements; it provides them direct feedbacks and hints on the resolution of problems. WebToTeach follows the following exercises: Java, C, C++, FORTRAN, Ada, and Pascal, which include writing fragments, writing data for a test fit, writing a full single-source program, and write multiple source files. This exercise includes the following.

2. Students are provided with the answer based on the exercise form, either with a specific text region or different text areas in their web browsers. When you apply the exercise solution, you instantly inform the students if it is correct. The student would be provided with details about the source of the loss in the event of a failure.

3. WebToTeach also offers teachers facilities for forgiving students' lateness, review the student's first and last application and submit mail to each specific student, send mail to them, set up and edit the students' day's post, and collect statistics on achieving their homework. WebToTeach has two key advantages: it can analyze software fragments and it can also conveniently be found in other departments of computer science. The biggest issue with the method is that the consistency of the student's curriculum is not feedbacked.[11]

4. WebToTeach is one of the early programs that facilitate the analysis of programming "complete the void." But the given exercise code is shielded from students in this scheme; thus, the system supports only one exercise gap. A textbox to provide the

missing code is provided to students. The scheme includes an integrated hierarchical analytical process to check the correctness of the programs of students, but it does not care about the consistency aspect of a program. The WebToTeach scheme has several methods for contrasting student software results with the predicted model solution with the correctness input of the program but has no means of separating the significant details and minor information in program outputs.

4. CodeLab

1. CodeLab is a web-based, immersive programming training framework that teaches Java, C++, C, and other languages to students. The system is the WebToTeach system enhanced edition. It supports programming exercises of "fill in the void," but the code given is secret. To enter their responses to the programming activities, students are given an editable textbox. Full software from the student approach is installed on the server and compiled. If a construct error is not present, the software is tested for consistency, otherwise, the students may generate custom compilation error messages. If the student approach does not yield the desired outcome, the student receives suggestions unique to the application to resolve the issue. After the first right reply to the exercise, students will replay a workout many times or switch to another.
2. Teachers can track the success of students by using an online student listing. You will access and understand the most current approach for each of the student's assigned activities. Teachers, therefore, don't know how many entries a student has received and how long a student has been working on a topic.[12]
3. The framework already has more than 200 brief activities, based on several programming fields. Exercises vary from the basic declaration of a vector or a description of assignment to more complicated problems with loops, functions, or methods, and even limited class descriptions. The Instructor Training Editor will incorporate additional activities. In special cases defined by the teacher, CodeLab decides the correctness of a method by comparing model solution machine states to a student one. Coding style and software reliability are not checked by the framework. The machine can be tested on www.turingscraft.com.

5. InSTEP

The inSTEP is a web-based instructional framework that lets students master C, C++, and Java loops. Students conclude an application practice with the completion and review of writing fields in a web form.

InSTEP compiles a solution on the server for the student. When the student's answer is compiled correctly, several test cases are dealt with. The application results are retrieved to check for errors. The compilation error messages would otherwise be returned; the student must correct and resubmit certain compilation errors. No more review is done whether the application results meet those predicted, the application is considered correct and input is returned. The application is considered correct. Otherwise, the outputs of the software would be checked for a sequence of established general errors in an output structure. If the mistake is not clear from the outputs of the software, each code block placed in a field by the student should be analyzed. After finishing the analysis, InSTEP sends the research back as a webpage to the student.[13]

CONCLUSION

The purpose of this research was to evaluate the efficacy of a Web-based instructional model for college students. Web-based education provides several benefits to its users, including simplified education based on the system's inherent interactivity, higher test scores, better resource utilization, and a more insatiable need for knowledge.

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