



Cognitio: An E-learning Portal

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Abstract: When World Wide Web (WWW) was created, in CERN in 1989, little did Tim Berners-Lee know that it would change the world as one knows it today.[1] Along with the help of WWW and the technological advancements, the new technology intervened with the lives of millions of people. The rapidly changing technology has a huge impact on the student life as well. With the increase in the use of technology, the quality of education has improved over the years and learning has become easier. Yet, a few years ago, 'e-learning' was a concept that was alien to people. People were not willing to take this jump in education and thought that this would not help but the results stated otherwise. These days, e-learning allows professionals and students to share the knowledge and manage the information and help to overcome the barriers of boundary and geography. In the paper, Cognitio an e-learning portal helps to overcome similar barriers and helps to achieve the maximum output of a student while making the subject interesting.

Keywords: E-learning, Online learning, trends, Cognitio, activity system

I. INTRODUCTION

Today, we have come a long way from where the internet was started. These days, internet has a lot of functionalities, one of them being-'e-learning' or 'online learning.' But few years back, people had no knowledge of the word 'e-learning' that was coined. This term was coined in 2000's when the internet was just beginning to take the world by storm. Everyone was confused about what it actually was as no one was clear about the meaning of e-learning. When it comes to teaching, everyone has a mindset of a classroom with one sole authority, that is, a teacher giving out lectures and notes to a group of students who sit in that particular class. This is what a traditional learning model is. In traditional classroom, one had to be physically present to attend the lectures and once someone misses out any part of the lecture, the person misses it forever and has to take help from other students. Then with the advent of computers, it radically transformed everything as one knows it. The technology became cheaper and faster, and thus new ideas and inventions started taking place. There was a boom in e-commerce, web-site development, better and faster computer chips were manufactured and thus, education sector was not left out. [2]

E-learning can be thought of as a computer enabled education which means that education is either aided by the use of computer or fully takes place using the computer and the internet. In earlier times, such as the early 2000's when the 'e-learning' word was coined, this type of education took place with the help of CD-ROM'S because the internet was not as fast as it is today. At that time, the pages were loaded very slowly. [3] Today, the technology has advanced a lot and it has naturally bridged the gap between the teachers and the students. E-learning helps to share all kinds of media like videos, documents and photos of all formats to enable sharing of knowledge at a much faster rate. Also, one can chat through messages and live chats with the professors with the help of online learning portals.

One of the best things ever happened to the mankind was the invention and evolution of internet and its impact on education. It drastically changed as we know education today. Courses from different universities could be taken by any person sitting miles away in some country in another continent.

Now, to make the project, an Activity System was used. To build a successful e-learning portal, it is important to understand the activity system, which is the basis of this project. It defines what needs to be done and what result or outcome one wishes to achieve. So, if one has outlined this system, it is very easy to understand the project.

The theory of the activity system is what one calls the activity theory. The activity theory represents the human perspective on one person's social - economic thinking. It gives guidance for carrying out a set of activities by using interconnected activity systems.

This paper gives the various features of Cognitio: An E-learning portal, especially made to overcome the difficulties faced in the current system. It is an e-learning portal on which the lectures and notes are uploaded and downloaded; also students can chat with teachers and give ratings on the matter uploaded and the lectures. They can send a message to the teacher for any queries.

There was a need for this since there were many problems faced by the students in the past scenario. There was a need for an e-portal which had notes, lectures, and books available at one place. Also, the interaction between

the teachers and the faculty members was not so consistent. Now, if a student has any difficulty, he/ she can message the faculty directly and the faculty will respond as soon as they see the message. Nowadays, it has been replaced with the term “Enhanced”. In this type of learning, the entire course structure is available online rather than being available on paper. This type of learning concludes a single or many events which are limited to certain conditions, through the use of which; students can attain goals and ambitions that they have in mind for themselves. However, there are particular environments that have been created appropriately to deploy effective learning which can last beyond the actual sessions. These sessions could be of varying length. There are many online systems that provide a platform of discussion groups and social interaction for the candidates. [2]

II. TRENDS IN E-LEARNING

E-learning, some years back was not known to the public. The terms like distance learning and or distance education were familiar. With the change and advancements in technology, new terms such as “distance learning and distance education” have been changed to “learning via the web or online learning”. [4]

The trends in the course of e-learning have been discussed here:

A. Mobile Technologies

A mobile is a device that can be used to send or receive calls. The first phone which can be termed as handheld was discovered in 1991. Mobile phone has reached levels thereafter. Nowadays, almost everyone familiar with the technology owns a mobile device. Hence, the future online learning solutions will readily be available on the mobile devices. The portal would be provided in the form of PDAs, digital pens and also on the phones that have been introduced yet. In future, mobile would be able to inculcate many functionalities including the e-learning solutions.

In United States of America, people have started using PDAs for their study purposes and in Europe, phones are widely used to train and develop machinery in the industries. In India, however, a gradual shift will soon be observed.

This field will be the first to observe a dramatic change in the system of online learning which can take place in a medium to long duration of term.

B. Simulations

A simulation is an imitation of a real world model with certain characteristic features as that of the real world process. The process of simulation has been mainly used for training purposes, for instance, in the sectors of defense activities, aviation and aeronautics. Simulations were not inculcated until now because they were highly costly and required complex tools for development. These days, since the development of technology has taken the world and the way it functions to altogether a new path, which has in turn has proved to be advantageous to the society; simulations are being used at a broader level. The vendors are using e-learning to give away certain templates of simulations that are title oriented and industry specific at a greater level.

Simulations are expected to play a great role in terms of education and training services. Particularly, handbooks will soon be replaced by simulations and will provide a greater benefit to the buyers.

C. Adaptive Learning Environments

Adaptive learning environment is a way of departing education by the means of interactive devices using computer as a medium. The educational matter provided is in terms of the intelligence and other features of the student or a trainee. The environment can adapt itself according to the need of the receiver. This method plays a great advantage over the traditional method of delivering education.

First, it can impart education to a large no. of people than the previous ways could do, that is, it benefits massive people.

Secondly, the education can be delivered to the “targeted” people.

Next, adaptive learning environment can be accessed through various devices.

Lastly, it provided a much greater diversity in the way, the technologies can be used.

Online learning has great future trends set up regarding the adaptive learning environments. Sooner or later, a shift will be observed from traditional way of learning to ALEs.

D. Open Source Web-based Tools

An open source is a platform which can be used in terms of manufacturing or development. It is meant to provide a universal access to the population without any kind of licensing or cost. It gives an access to the original design or a blueprint and also an unrestricted access to the developmental phases or versions of the original design. Today, there are several providers of open source web based learning tools. The number of providers is growing at a large level. These tools provide a benefit over the commercial tools. They will be cheaper, more stable, have better performance and would be able to provide access to code.

The future for open source online learning tools is yet to be adopted but the most important thing is to make the right decision on which software tool to use in accordance to the benefits it provides.

E. Standards Development

Standard Development means to bring all the widely distributed groups that share the same interest. It means to coordinate all the foundations and technologies with the public processes and working.

Before the past few years, there were several different groups that were working for this web based technology individually. The communication between these groups was not up to the mark, that is, they were not significantly connected to one another.

What one needs, is to build a “Common Community Model” wherein these groups work for the foundation of e-learning. Rules must be set up for the developers by the means of which learning and implementation of the content is made easier. These rules, in turn, must be adopted by the learning matter, the people to whom the product will be delivered to and the person who would be responsible for the developing process.

Apparently, the standards and specifications will be evolving and will be adopted in the real time processes of learning and customized adaptive learning.

III. THEORY OF ACTIVITY

The way of comprehension of a group of people who wish to learn something is by devising a theory that involves their activities. The theory of the Activity Systems belongs to the activity theory. These activity systems depict the steps that would take place in order to understand a process. Various components having distinct characters and functions are inter-connected in these systems which provide an analytical help to the researcher. Factors of these activity systems play a great role in defining the process of the activity.[5] These are as follows:

- The subject that is acting on an element
- The object which is being acted upon
- The conclusion of the acting activity
- The tools used to provide the medium of action
- The environment where the process is being defined
- The guidelines that provides a set of rules for the activities to take place
- The division of roles of the stakeholders

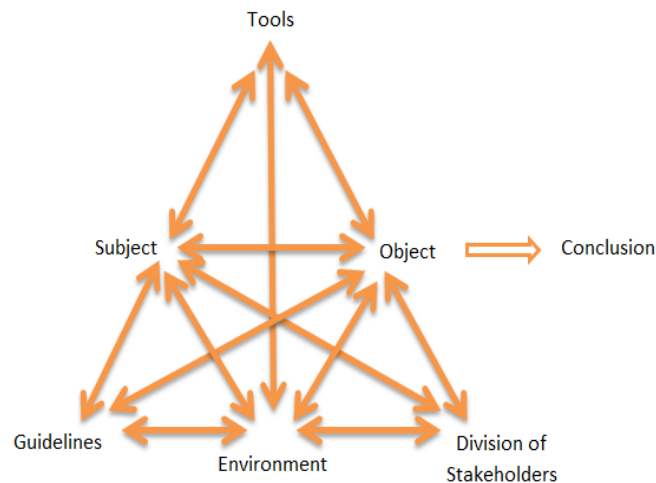


Figure 1: Activity Theory

The components given in the Figure 1 above are inter-linked to provide an effective outcome. The main observation is on the links on various components. The tension between them is measured in order to study the development procedure. If one of the links is affected, the other links related to the affected link are bound to change their dimension as well.

The Activity Theory is useful to the study the development of the activities, the changes that take place when one of the components is affected, nature of the changes that have taken place as a whole and how those changes can be reversed or prevented altogether.

IV. RESEARCH METHODS

A qualitative study was conducted on the basis of the observed data and behavior pattern of the online activities. The activity theory was used as the basis of the research. This research uses a component of the activity theory which is known as the Tool Mediation Property. This property states that the human behavior can be predicted, tracked and mediated by the tools they use that form a part of the activity diagram. [6] The main focus of this research is the tools that were used and the processes it affected. The tool mediation has been used in terms of Cognition, a web based learning classroom where participants can exchange, interact or share distinct resources though the use of internet and a device that uses internet. The Cognitio activity system is shown below:

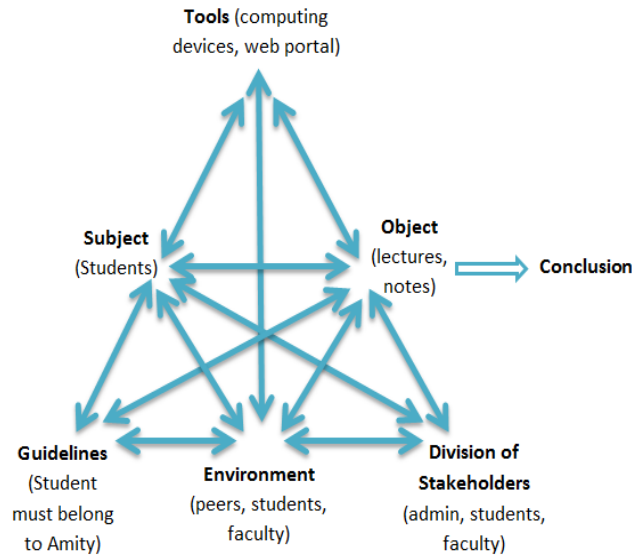


Figure 2: Cognitio Activity System

This activity diagram depicts different components used for carrying out a process.

The subject here is a student on which the entire activity is based. The object could be the lectures, notes, books or services that are being accessed by the students. Cognitio provides various object options. The subject can choose from objects such as books, notes, lectures, articles, presentations, services that the institute provides, chat feature etc. The tools have been used to provide a link between the subject and the object. These include, computing devices (could be a computer, a tablet or a smart phone), the e-learning portal and the design strategies. The guidelines that apply here could be many. A case in point is that the subject must belong to the institution where the classroom has been deployed, that is, the student participating in the online classroom must be a student of Amity University or else the student will not be able to log in. The environment would include both the faculty members and the students who are a part of the activity at a particular instance. The division of stakeholders means the part that every participant has to play. This is in direct reference to the responsibilities of the stakeholders. For instance, a teacher has to upload notes and create groups according to various classes. Figure 2 shows a depiction of this scenario.

V. COGNITIO FUNCTIONALITIES

Cognitio, the e-portal, was made by keeping in mind the current scenario. During the past years, various problems were encountered. So, to help overcome problems like missing out of lectures, and missing notes and non-availability of books, Cognitio made sure that these things do not hamper the future. So, it was made cautiously by bearing in mind these various points. Now, the various functionalities that Cognitio offers are:

A. **Information about the Institute:**

In this feature, additional information about institute is added and made available to the students who are interested in knowing the basic history of the institute.

B. **Information about Faculty Members:**

The website also included the information about the faculty members of the institute such as what subject they teach where they can be found on the campus.

C. **Internal Institute directions:**

Students, who are new to the institute, can easily get lost on the campus. So, there are directions on the website directing them to go from where to where based on their location which they have fed in.

D. **Instant Messaging:**

This means that the faculty members can send the messages to each other on the server without even having their numbers. They will have their own circle in which they can send messages regarding scheduling/cancellation of classes or even for substitutions.

E. **Uploading Notes:**

Notes would be uploaded by the faculty members and/or the students having them. The notes by the seniors will also be uploaded on the website. The notes can be either Xeroxed or in document form. The limit on the size of the notes won't be an issue.

F. Services in Institute:

There will be a page on the website dedicated to the various services that can be availed in the campus, thus, helping in achieving the satisfaction of the student. Information about the book shops, the cafeterias, the photo copy shops and the charge list of all these would be available too.

G. News Feed:

The students of the institute would be regularly updated on the events and happenings that are taking place in the campus. These events could be any competition, any debate or any guest lecture by some eminent personality happening in any block of the campus.

H. Exchange of books:

This facility to exchange books would be provided. The seniors would be able to sell or rent their old or unused books to the juniors.

I. Accounts:

Only students and faculty would be allowed to create their accounts. Verification would be used for this purpose.

J. Videos:

The users of the virtual class room will be able to access the various videos of various subjects uploaded by their faculty members. This would in turn enhance the better learning of the subject.

K. Multiple groups Access:

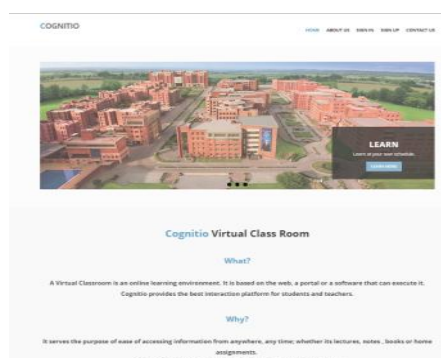
Multiple group access functionality would be provided. The teachers can create groups for the students that they are teaching and upload notes on them. Likewise, the students can also request the teachers to join the groups.

L. User rating and feedback mechanism:

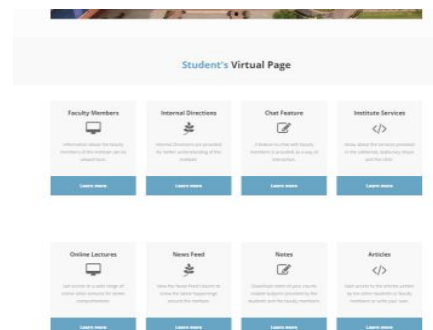
The students would be provided with an opportunity to rate and provide feedback for the material uploaded on the website.



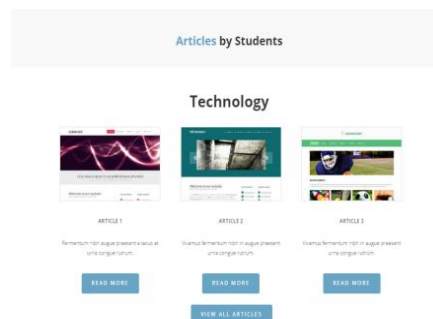
Screen Capture 1: Welcome Page



Screen Capture 2: Home Page



Screen Capture 3: Students Home Page



Screen Capture 4: Student's Article Page

VI. RESULT AND DISCUSSION

Technology is changing rapidly and so is the method of teaching. From traditional teaching to online learning, technology has helped to shape the world as one knows it. E-learning helps in better understanding of the topic and help in a better approach for teaching difficult topics with ease. Also, an activity system was used to help make the project and for better understanding of the project. The project is made to overcome the shortcomings of the current system. One can easily view the videos and the download the notes if they have missed out the classes or they need to better understand the topics. The project helps in cognitive learning of the user and helps the student or the professional to better understand their subjects.

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