E-LEARNING SYSTEM ANALYSIS USING SMART AIDED TOOLS THROUGH WEB SERVICES

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ABSTRACT

A web service is defined as a software system which is designed to interact with the applications over the network in an independent manner. Nowadays, everything has been taken place through online. Some applications which uses web services like e-shopping, e-learning, e-commerce and so on. To improve the efficiency of e-learning many online tutorial services have been developed. So it is easy for the students to learn all the things through internet. An earlier technique has been developed for mediation infrastructure which provides an e-learning system using Smart Space learning system (SSLS). The main concern over SSLS is that it cannot be applied to an IT-mediated learning which has closed information environments. Another technique for e-learning service is that Open Smart Classroom (OSC) on Open Smart Platform to enable intercontinental and intercultural class with advanced features. The issue over OSC is that it provides e-learning services to only intercultural students and it is unreliable to use. To overcome all the issues, a new technique is presented in this work. An effective e-learning system (ELS) is used to improve the online education/ online tutorial service which have to be run under multiple platforms. The proposed ELS use smart tools to provide the e-learning web service to all environments i.e., both open and closed environments. It can also be applied to multicultural students whoever involving in the online tutoring service schemes. This is built on software infrastructure based on multi-agent system architecture using web service technology. It will improve the reliability and scalability of the service with the help of smart class room.

KEYWORDS: Smart Class Room, ELS, Smart tools.

I. INTRODUCTION

In a traditional method, learning has been done with students and teachers in a face to face manner which assumes as a better learning system. Since the growth of technology has made to develop many new things i.e., everything is based on the internet. So, learning system has also been done through online. This is referred as e-learning. Many web services have been developed for e-learning system which needs some electronic tools to deliver through online. Although electronic tools are needed to deliver tutoring online, a definition of the online process and its best practices may be needed first in order to help select the appropriate technology.

A real time interaction has been made in this e-learning service which is to be more helpful for the distance learners where they can clarify their doubt through online. But the tutor, being a good guide, sent back a Socratic answer with more questioning prompts; the student, expecting the answer, became frustrated. Although the student may expect a give and take interaction in a face-to-face tutoring session, the email format suggested to the student that the question should be answered with a direct answer. Since they are learners, it is difficult for students to get the idea soon. Here technology has not been well developed to provide with this type of service.

Normally, e-learning models begin with email but there has been an emergence of new models whenever new tools are available, both in asynchronous and synchronous formats. The following models are presented in the context of the specific tool used, for example, Blackboard or NetTutor. A

learning service is termed as an event. To attain the educational objective by learning service, it is necessary to create a learning environment consisting of educators, educational material, communication infrastructure, meeting places, etc. Examples of a learning service are the delivery of a course, the provision of a web-based training application or the provision of self-study material.

A new learning system is developed with advanced techniques to help the student and teacher for the better outcome. To increase the human-computer interface, mobile devices play an important role in this learning system. The modeling of learning services with web services also opens the possibility of automated integration of educational services into a smart learning space and the automated combination of them.

In the smart class system, three successive phases have been developed: They are Individual Smart space, Open Smart Space, and Smart Community. The first phase describes the communication carries between software modules and the second phase will allow other smart devices like mobile phones for enhancing the communication. The last phase describes the inter-space management scheme which sustains the open smart space systems. These techniques have been developed with a limited scenario and can exist under certain applications.

With the increasing requirements of intercultural and intercontinental communication for learning purpose, just enabling remote students to participate in the Smart Classroom and to easily communicate with teacher and local students is inadequate. So for this kind of systems, smart classrooms have been developed. To connect these classrooms, we need to tackle the intercommunication problem in the open network, including video, voice, and controlling messages. This type of services has been processed and taken over by smart class system.

In this work, we explore literature review in Section 2. Section 3 introduces the architectural diagram for our proposed work Effective E-Learning System using Smart Tools, its features, design and implementation. Section 4 explains about the results and discussions and we draw our conclusion in Section 5.

II. LITERATURE REVIEW

In people's daily life, with the development of human-computing interaction, more and more natural human-computing interfaces have been integrated for enhancing work efficiency [1]. A unique disintegration of web applications can be envisaged since September 2005 when official definition of the term Web 2.0 was published by O'Reilly. During this period, the basic principle of Web 2.0 was proved to be very successful. Similar changes occurred also in the field of e-learning. Researchers in [2] focus on collaborative tagging in learning systems and the characteristics of the social network that would be created by tags. Several recommendations have also been provided how to effectively integrate a social network acquired from tags into learning systems.

E-learning solutions not only increase the demand in providing learning objects accessible in the e-learning platforms but also across other Web applications too. This need can be solved with the help of semantic technologies where its main goal is to reveal to the computer applications the resources semantics. Researcher in [3] [4] proposes a model that extends the Learning Object Metadata standard integrated with ontology-based semantic annotations for the efficient use of Learning Objects outside Learning Management Systems. The main objective of eAccess2Learn Framework is to provide tools and services that results in the facilitation of design and development of e-training resources that can be exchanged between different e-training platforms and programs that in turn can be reusable between different user groups.

Researchers in [6] discusses about Technology Enhanced Learning which being a challenging application area for adaptive and personalized web services and content involves broad range of learning activities, the use of rich multimedia content, as well as a broad range of users with differing expertise. At the same time, mobile devices such as mobile phone, smart phone, PDA, and laptop have been easily accessible for ordinary people. Researchers in [9] and [11] emphasize that mobile devices play an important role in learning. For example, the teacher uses his Smart Phone to bring the presentation file and to control the slideshow, while the students can use a laptop to discuss with others. Some of these features have been incorporated in several projects.

Previous Smart Platform enables mobile devices roaming with users to connect into Smart Space by preinstalled modules (eContainer and eADK-based agent of Smart Platform). However, it lacks

convenience for the users, especially for those who first come into Smart Space to use their mobile devices. Open Smart Platform applies OSPG as the Web-based mobile interface for mobile devices interaction in Smart Space. OSPG provides the mobile interfaces, such as PPT upload or Turn-to-Next-Page, as a Web page [5], [7].

Researcher in [8] discusses about new technique that facilitates trust in online e-learning activities. The privacy of learners is being protected by way of identity management where personal information can be protected through some process anonymity. Subsequently in order to expect learners to trust other pseudonymous participants, we emphasize the reliable mechanism needed for managing participants' reputations and assuring that such reputations are legitimately obtained.

Researchers in [10] discuss about real-time interactive virtual classroom where tele-education experience is of great significance in distance learning. Subsequently with the development of pervasive computing aimed at enhancing human-computer interface and alternatively integrating pervasive computing technologies into classrooms enhances the experience of both teacher and students, in which case the teacher easily interacts with local and remote students.

III.   EFFECTIVE E-LEARNING SYSTEM USING SMART TOOLS

Tutoring services for e-learning are comprehensive entities considered for a definite purpose and targeted at a specific audience. The providers will clearly analyze the kind of skills to develop for the learners and trained with some more efforts. The objects of learning are common in nature and of a smaller granularity level. The technique presented here for e-learning through web services produce educational resources. Learning services are used mainly in the corporate world and so the services which are available does not free for cost. So the provisions have been made here for the students to offer placement, booking, announcement and payment of educational services without any interruption.
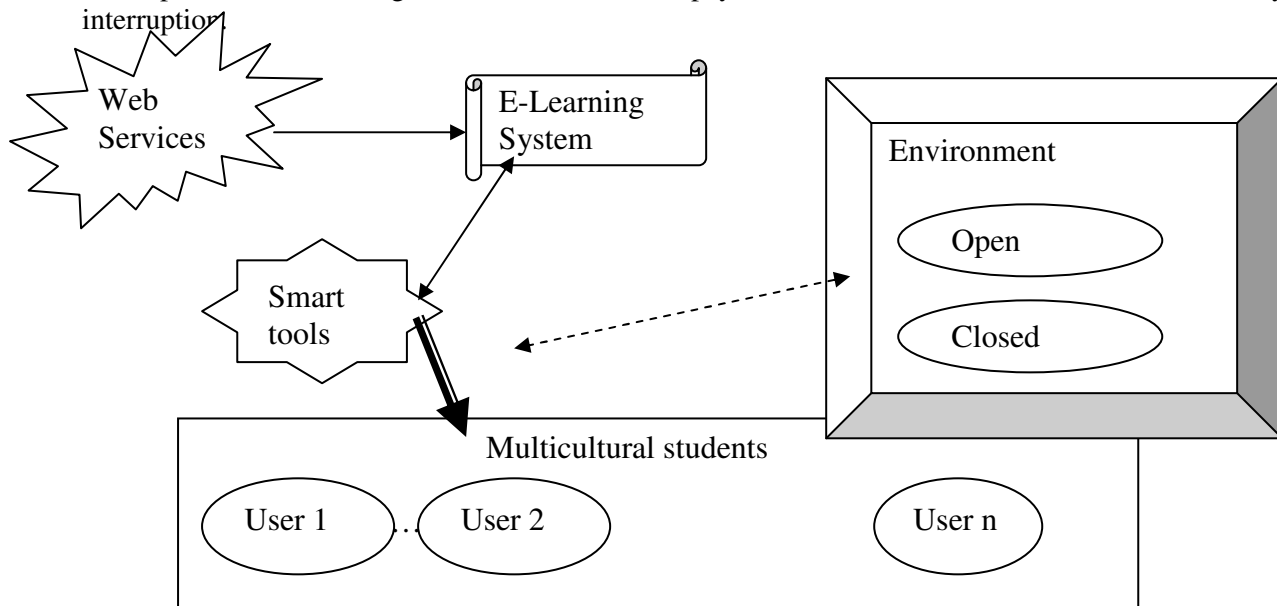

Figure 1 Architecture Diagram of E-Learning System Using Smart Tools

The figure 1 shows the architecture diagram of E-Learning system using smart tools. For e-learning process, the student who acts as a user will request the tutor for e-learning process. According to a specific schedule, tutoring services used manual and physical resources to manage it whenever needed by the user. Normally, tutoring system needs a particular time to discuss about their topics and sessions for an appointment. After receiving the message from the user, the tutor will identify the students' skill and respond to them based on their performance.

By using smart tools, the online tutoring schemes are applied for multicultural students i.e., any students can attend the e-learning system based on their skills across world wide. The proposed e-learning system using smart tools is applied to both open and closed environments. It chooses the learning service efficiently based on users' profiles. The mediation infrastructure predicts to

correspond heterogeneous learning services offered by various information systems and mediate them using learner profiles. Since online tutoring services increases day by day, it is possible to include more academic subjects to enhance the learning services. The proposed ELS using smart tools are very reliable to use and the scalability of the e-learning process is also be improved.

IV.   RESULTS AND DISCUSSION

Web Services provide a perfect modern solution for hyper linking software components over the Internet. During a month of course, 30 students have been participated in an experimental study. Initially, 9 students only participated. The communication rate was 83%. A rating has been taken under students' judgments. After that, the two staff-tutors rated all questions, together with the questions started but not yet rated by the students. Generally, the agreement between the tutors on solved versus not-solved questions is high: 86% or 74%.

 If we combine the judgment of the students and the tutors, by counting a question as solved if at least two of the three ratings are 4 or above, the number of questions solved is approximately the same as the number indicated by the students. So student opinion does not differ much from expert (staff) opinions.
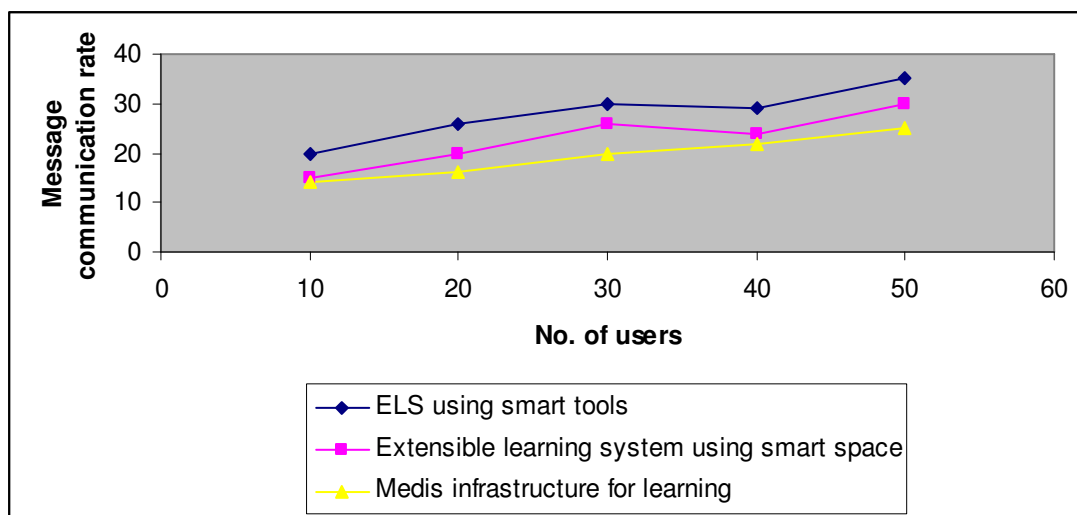

Figure 2 No. of users vs. Message Communication Rate

Figure 2 describes the message communication rate of different techniques like ELS using smart tools, Extensible learning system using smart space and Medis infrastructure for learning. As the number of users increases for e-learning, the communication rate should be efficient. The proposed ELS using smart tools for e-learning provide comparatively good result when compared to the existing ones.
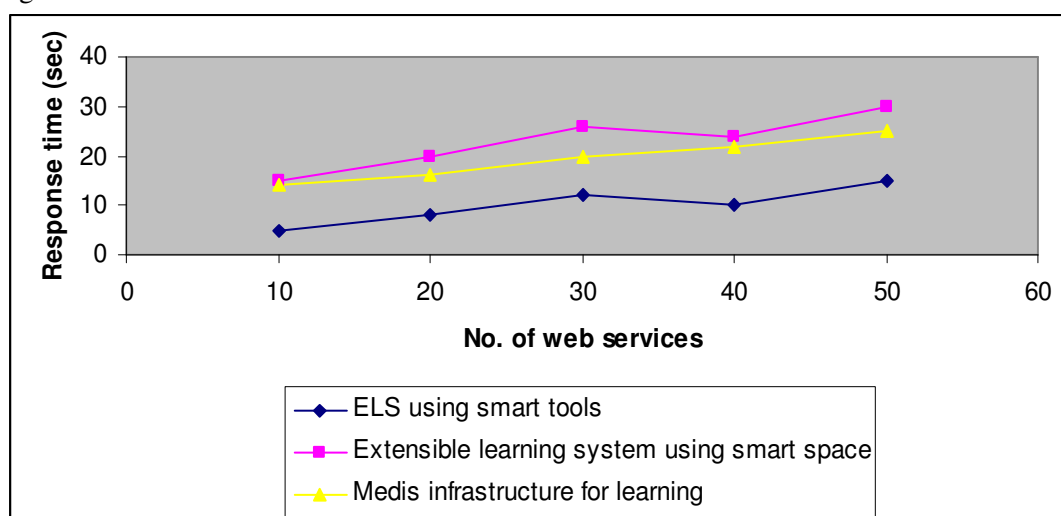

Figure 3 No. of web services vs. Response time

Figure 3 describes the response time of web services for different techniques used by the e-learning system. The figure 3 also shows that the increase in the number of web services simultaneously results in lowering of response time provided by the tutor for the student by way of using ELS tutoring scheme for e-learning using smart tools.
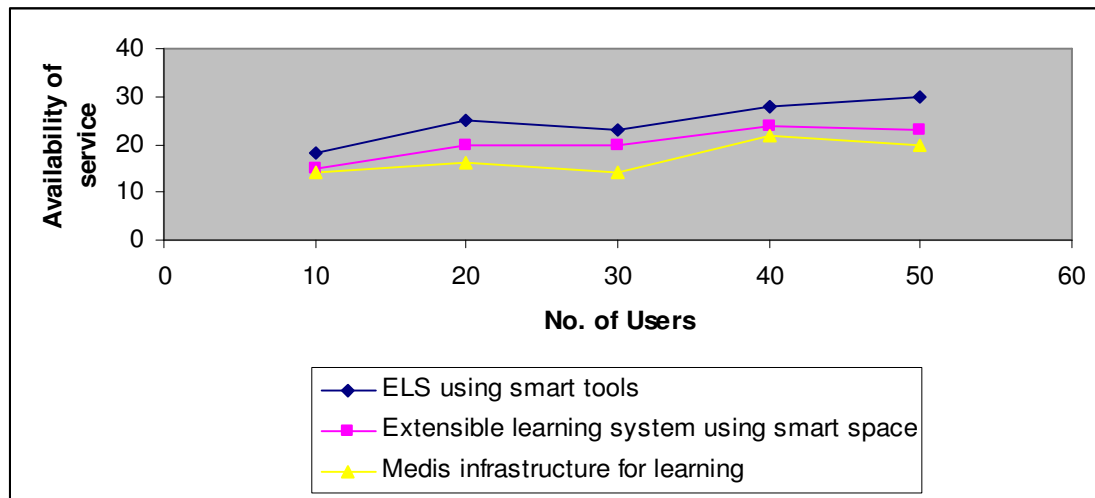

Figure 4 No. of Users vs. Availability of service

Figure 4 describes the availability of web services for different techniques used for e-learning system. When the number of users increases for e-learning, then the availability rate across world wide in the proposed ELS tutoring scheme for e-learning is better when contrast to an existing ones. The proposed effective e-learning system using smart tools is experimented to show the performance improvement with the existing model in terms of application throughput, delivery report, interaction of more number of people, and scalability.

V.   CONCLUSION

The evolution of online tutoring has showed us that success may not depend so much upon the tool selected, but on the development of an appropriate culture for online tutoring, an understanding of the process and parameters involved. Learning services which make use of physical or human resources are offered according to a specific schedule since the use of those resources needs to be managed. The proposed effective e-learning system using smart tools is easy for education environment which effectively integrated Web Services to exploit the resource sharing for appropriate online tutoring domain and it can be applied effectively to multicultural students. It efficiently achieved Easy installation, Ease of use, Low maintenance efforts, and Integration with other Internet/Intranet based education tools. The experimental results showed an improved performance of communication rate; delivery time and scalability which is proved that the interactive web service tutoring scheme for e-learning is good.

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