CLOUD COMPUTING CONCEPTS FOR ACADEMIC COLLABORATION

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Abstract. The aim of this paper is to explain how cloud computing technologies improve academic collaboration. To accomplish that, we have to explore the current trend of the global computer network field. During the past few years, technology has evolved in many ways; many valuable web applications and services have been introduced to internet users. Social networking, synchronous/asynchronous communication, on-line video conferencing, and wikis are just a few examples of those web technologies that altered the way people interact nowadays. By utilizing some of the latest web tools and services and combining them with the most recent semantic Cloud Computing techniques, a wide and growing array of technology services and applications are provided, which are highly specialized or distinctive to individual or to educational campuses. Therefore, Cloud Computing can facilitate a new way of world academic collaboration; and introduce students to new and different ways that can help them manage massive workloads.

Keywords: asynchronous learning, cloud computing, collaborative learning, corporate education, e-learning, semantic education, social learning, synchronous learning, Web 3.0 technologies

Introduction

During the past few years, Cloud Computing has been one of the most controversial topics in education. The potential that Cloud computing presents is accessing the largest computer network and information database humans have ever invented, the World Wide Web (abbreviated as WWW or W3).
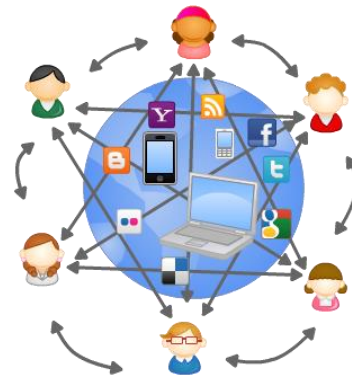
Users of the internet can gain access to huge amounts of information resources and services. The development of the WWW was the most important step to link up the whole world online.   With the increasing number of users and the availability of easy-to-use technologies, Internet has become the Universal source of information and a very powerful medium for communication among users. In recent years, the free web based software applications and services have become very popular especially among young Lebanese net users. Some of the most famous web applications include: social networking services (e.g., Facebook and Twitter), multi-media content-creation (e.g., Wiki, Wikipedia, blogs, Flicker and YouTube), Really Simple Syndication (RSS) and many more. Despite of this huge development in technology, our educational systems have not yet utilized much of these technologies. In taking advantage of this growth, we would allocate great potential for the academic collaboration. The web technology could be a practical medium for fast and precise structure in the academic collaboration.

Towards Web concept in education

Web 1.0 concept of education

Web 1.0 is the phrase used to refer to the early stage of the World Wide Web from 1990 to 2000. The Web 1.0 was static Web Pages. It allowed information or data to be published over the internet. For educational purposes, it was the first time in history where academics information content was shared to the learner using technology platforms. Web 1.0 had established great opportunities in open and distance learning. Nevertheless, Web 1.0 could not fulfill educational needs, in view of the fact that Web 1.0 educational usage was limited to publish content only. Web 1.0 wasn't referred to as such until the shift away from static WebPages where the user only receive information (Web 1.0), to dynamic web applications (Web 2.0), where user can receive and add information or services to the content of the internet.

Web 2.0 concepts of education

The second generation of the Internet, Web 2.0 had evolved into an interactive mechanism used for content and communications (Alexander, 2006). Despite the fact that the first generation of the World Wide Web left the majority of users of the Web as consumers; on the other hand the second generation of the World Wide Web allowed users to be active participants of the web contents. With the evolution of Web 1.0 to Web 2.0, there was a transformation of web- sites/applications like wikis, blogs and social networks became a part of most people's lives. In education, the actual contribution of Web 2.0 lies in the learner's ability to be able to interact and manipulate the educational web contents. Hence it permits the learner to insert comments, reply or even change information created by his teacher, as a replacement for of passively reading it. Applications like E-learning 2.0, Classroom 2.0 and Enterprise 2.0 appear (McAfee, 2006).

Web 3.0 concepts in education

Web 3.0 is the third generation of the web evolution. Web 3.0 is still in process of being developed. It is the next major change both in how websites are created and, more importantly, how people interact with them. Many people believe that we will be breaking into Web 3.0 sometime around 2015. Web 3.0 is a semantic, the term denoting the intelligent web; where the computers generate new information rather than humans. The semantic web will teach the computer what the data means, and this will evolve into artificial intelligence that can utilize that information. The web 3.0 great potentials to combine and integrate Web content and services to improve the end-user experience. Inspired by the technologies that are being used in the Web 3.0, an educational concept was visualized and planned in turn to utilize those procedure in education (Tie-Jun et al., 2009).

A glimpse into the future of the semantic web

The web is in the middle of evolutionary phases, it is creating great innovation in education (Pahl & Holohan, 2009). No one exactly knows where it is leading us; yet there are common indications of its effect on the future of education. At the present time, we have numerous types of tools that can link up the Internet. We are becoming more mobile. Increasingly, our cars and the buildings around us become smarter and more connected to each other. Eventually, all machines around us will be Internet-connected. This will make the Internet always present in our lives: at schools, at home, at work, on the road, and everywhere. This may very well evolve into some interesting ways in which the Internet will be used in the future to connect to virtual representatives of real people. The entire web would evolve into one single virtual world with buildings and other areas to travel around and virtual representatives of real people to interact with. Establishing an online portfolio is a leading concern in the future. Increasingly, people are evaluated by the track they leave on the Internet. That entire perception of portfolio-center record will be an influential element of how social media have an effect on education.
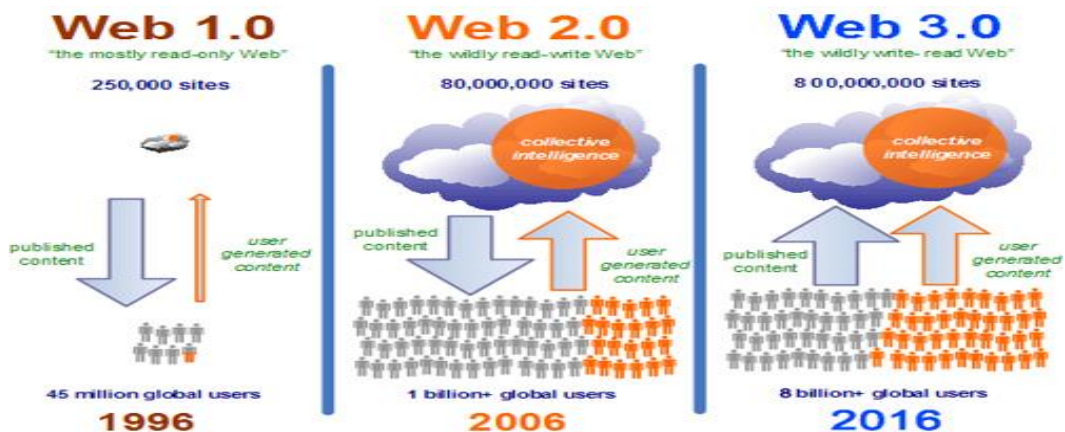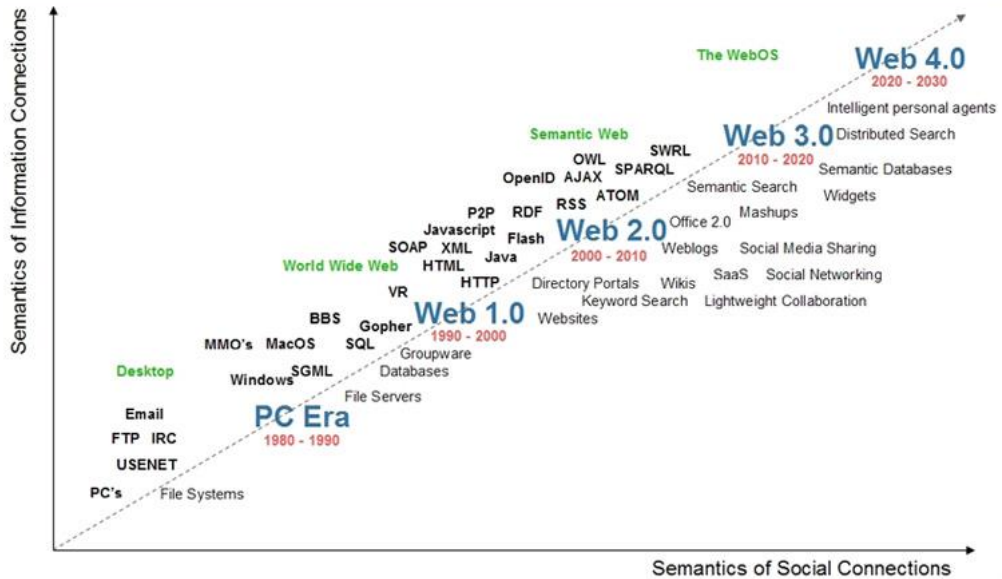
Web 1.0	Web 2.0	Web 3.0
"the mostly read only web"	"the wildly read-write web"	"the portable personal web"
45 million global users (1996)	1 billion+ global users (2006)	focused on the individual
focused on companies	focused on communities	lifestream
home pages	blogs	consolidating dynamic content
owning content	sharing content	the semantic web
Britannica Online	Wikipedia	widgets, drag & drop mashups
HTML, portals	XML, RSS	user behavior ("me-onomy")
web forms	web applications	iGoogle, NetVibes
directories (taxonomy)	tagging ("folksonomy")	user engagement
Netscape	Google	advertisement
pages views	cost per click	
advertising	word of mouth	

Impact of the semantic web on education

In education, the students will learn live using adaptive technology videos formats that can integrate the physical worlds and the digital worlds. It can evaluate students' reactions and generate analytic data that demonstrate students learning. Information from digital surroundings that are internet-

43

connected can provide tutors information about how a student is progressing in learning and details on how to improve their students' learning.

Many of these technologies are not new, but they are becoming increasingly everywhere, transforming existing learning processes and offering new insights into teaching and learning. Education focuses will shift from consumption of educational content provided by the teachers to creation of educational content by the students. As students will have more access to information, education will shift to project-based, constantly initiate opportunity for advance and more personalized learning. Students will be more engaged participants in their learning, more self-reliance. Students can learn more about subject matter as they establish advanced search techniques. Tutor will be able to work with small groups and design an engaging and collaborative more complex coursework.

Synchronous digital-learning

All education practice focal point is the dissemination of knowledge and expertise among teachers and students. In the traditional scenario, this takes place in the classroom. This face to face setting is called synchronous, in that the teachers and students interact in the same place at the same time. Synchronous digital-Learning is often integrated by the use of on-line live communication (both text and video) web media such as Video conferencing, Messenger, Social Network, or even meet up in virtual space sitting such as Second Life. Synchronous digital-Learning can be in the form of online one to one communication between tutor and student; or communication between groups of tutors and students using the same virtual environment. This way everyone can cooperate or answer questions between them.

Synchronous learning elements

Chat (text only)

Synchronous chat services permit many participants to interact at the same time. This is an excellent way to communicate. Users can save the chat by archiving it to look at it later on. The chat session can be save as a .txt or .rtf file.

Web conferencing

Conference services permit participants to interact using webcams, microphone and a headset. In education, web conference can broadcast a live stream of a classroom session, a lecture of slides, or graphics.

Podcasts

Internet radio services stream audio over the Internet. This service is practical when there is not sufficient bandwidth to broadcast live video of an event. In education, instructors might stream audio file for students to retrieve and go through it later as well over the web. Examples of audio streaming include speeches, audio story, or classroom lecture.

Virtual worlds

It is an interactive social network like Second Life, where users engage in a variety of social activities. In education virtual world is an excellent communication tool that can be as a place to hold live classroom sessions, present information, or place for students to meet and collaborate.

Asynchronous digital-learning

Asynchronous learning is a student-centered teaching method, where learners can work at their own places and preferred times. Asynchronous digital learning is often integrated by the use of the online learning resources such as e-mail, discussion boards, wikis and blogs. Many classes that meet up face to face use online resources in addition. Also, when record the content of synchronous learning to be to review latter it becomes asynchronous. The

asynchronous learning, tutors must take on new roles. It demands that instructors become instructional designers, facilitators, and assessors of grades. The asynchronous digital learning requires students to be actively involved with and take more responsibility for their own learning.

Asynchronous class elements

Social networking

Many tutors at the present time integrate social networking in order to improve learner cooperation and communication. Many educational institutions integrate social networking into the learning management systems. Most popular social networking sites are Facebook, MySpace, blogs, wikis, Linkedln, Bebo, Twitter, Flickr, Youtube, Youstream, and more

E-mail

Electronic mail is another valuable web tool that can facilitate communication. In education, E-Mail services can facilitate communication between instructor and peers. It can be utilize to ask questions, maintain in contact, and receiving/ sending courses materials as attachments, and keep informed.

Repositories

Digital libraries contain and store digitally relevant course materials. The material can be in any form for example documents, pdf, presentations, slides, graphics, audio, and video files.

Discussion forums and groups

Discussion boards are a great place to meet other members, get advice, and share and find information. In education, discussion forums are an excellent method to carry a conversation, correspond to query. They are also good places to share resources or links.

Collaborative file

Collaborative files allow students to cooperate with each other, work together, modify or amend each other's file. There is no software to download, and user work is stored safely online and can be accessed from any computer. Google Docs is a place that allows you to build collaborative files. Google docs are an easy-to-use online word processor, spreadsheet, presentation editor, Drawing, and Forms that enables tutors and students to create, store and share instantly and securely, and collaborate online in real time. Collaborative files allow user to create new documents from scratch or upload existing documents, spreadsheets and presentations. A "wiki" is another place that allows you to build documents–much in the way that Wikipedia works; users can add text as well as graphics.

Conclusions

The web technology has changed our lives in various ways. The speed of transformation in today's world is rapidly increasing. Our education system must keep up with the changes. The objective of this paradigm is to present a lifelong learning technique. The every day practice of using the internet tools and services comes from its web 2.0 social characteristics and the personalized search content which rises with web 3.0. Web 3.0 technology concept will be able to accomplish a personalized interactivity with each user. The Web 2.0 social networking concept is contributing in gaining wide acceptance and satisfaction among young generation. Moreover, technologies such as cloud computing and web 3.0 have rapidly evolved over the last few years. Despite of this huge development in technology, educational concepts have not yet been developed. Therefore, there is a lot of potential to take advantage of this growth. Finally, the web technology could be a practical medium for fast and precise structure in the academic section.

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