



Web-based English Language Learning: A Review from Web 1.0 to Web 3.0

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ARTICLE INFO

Article History:

Received: May 17, 2022

Revised: June 28, 2022

Accepted: June 29, 2022

Available Online: June 30, 2022

Keywords:

English Language Learning

Web 1.0

Web 2.0

Web 3.0

Web Tools

Web Application

Funding:

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ABSTRACT

Since the internet network's establishment, the World Wide Web is considered as the most important tool used by billions of people across the world. It allows people to share the media, read, write, publish and interact with others via the internet. Since its advent, the World Wide Web has evolved from a read-only medium technological network to the collaborative one where learners are interlinked in various ways. Through its various stages of evolution, English language learning was transformed from simple to an interactive, collaborative, and learner-centered environment. This paper will present the conceptual review of the literature, in chronological order, on how English language learning has evolved over the past years, particularly from web 1.0 to web 3.0. It also aims to present the analysis of the evolution of the World Wide Web (www) technologies from a learner perspective; therefore, it will elucidate various web-based tools, technologies, trends, and applications used by learners in their education.

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1. Introduction

The ever-increasing use of internet has led an explosion of websites loaded with treasures of information. The internet has become "the fastest, most efficient and cheapest medium for gathering and disseminating information today, and using the web for anything—from business to academic research to simple entertainment..." (Miranda, Isaias, & Costa, 2014). The rapid dissemination of information was actually the result of swift evolution of technology. Since Berners-Lee introduced the idea of interlinked hypertext documents in 1989, the World Wide Web (www) has grown to be the explosion of human knowledge. It has changed the ways of communication and the exchange of the information with its capacity of increasing the globalization. World Wide Web is a system based on interlinked hypertext document that can be accessed via internet. Web-based communication system (group conferencing, email, instant messaging service) is a strong medium of interaction that allows English language learners to communicate effectively with their peers, teachers and other co-workers (Mioduser, Nachmias, Lahav, & Oren, 2000). In addition, web-based learning assists students to practice English language skills (reading, writing, speaking and listening) effectively as Hussain (2012) argued that "web 1.0 connects real people to the World Wide Web (www), the web 2.0 connects real people who use the www, the web 3.0 will connect the virtual representatives of the real people who use the www" (p. 12). Fuchs et al. (2010) define web 1.0, 2.0 and 3.0 as a cognitive medium, a communicative medium, and as collaborative medium respectively. This is how the evolution of web has started its journey from read-only medium to the collaborative one.

This study aims to present the review of the literature on the development of web-based English language learning through web 1.0, web 2.0 and web 3.0. Second, it also intends to discuss the web technologies and tools used by English language learners. This study used systematic review approach that aimed to study the development of web-based English language learning through web 1.0 to web 3.0. It included research papers published related to World Wide Web technology and its effects on English language learning. It is a systematic way to collect and synthesize the previous research studies based on meta-level evidences (Tranfield, Denyer, & Smart, 2003). We used several online digital sources and collected various studies that are relevant to the web, web evolution and English language learners' use of web using different search engines such as Google Scholar, Springer Link, Eric, etc. Then the most relevant research studies were selected and discussed to develop an insightful understanding of the previous research conducted on the particular topic.

2. World Wide Web

World Wide Web (www) is the main tool used across the world to read, write and share the information and to interact with other people via internet. The web today used is the product of various changes that evolved over the time to create new ways of learning in general and English language learning in particular. Since the establishment of www, web-based English language learning has gone through constant evolution with the help of innovative web technologies. Since its commencement, it has made much progress that is explained below in the literature review.

2.1 Web 1.0

Though the web was invented in 1989, its inclusion in education was carried out later in 1993. Berners-Lee, the inventor of web, initially developed four technologies to make the web functional (1) HTML (Hyper Text Markup Language) which was used to markup the language to create the web document, (2) URI which is also known as URL (Uniform Resource Identifier) which was an address given to any page or resource available on the web as it can be located and linked, (3) HTTP (Hyper Text Transfer Protocol), that was a data transfer method allowing web resources to be retrieved across the internet, and (4) Web browser, which is a type of software that allows a user to use and navigate the web by utilizing HTML, URL, and HTTP. Opposite to the concept of Berners-Lee, only a small percentage of people could actually produce the content using the web, though millions of people were using it.

Web 1.0, thus, referred to the "read-only web" or "syntactic web" wherein readers could only view and the content without having the direct communication between a writer and a reader. English language learners could use receptive skills in non-participatory mode only as they could not interact with each other using the web 1.0 tools. However, they could visit the web pages and could contact the writer only if the contact information was available. This way English language learners could "access" the information rather than "creating" it. Therefore, it was used only as an information portal and was considered as the publishing source rather than a participating source. It was an improvement over the print as a medium for transferring knowledge. The main function of web 1.0 for users was to let them read and consume static pages (based on text, pictures and animation). Hence, the users were bound to read and write only. Moreover, web 1.0 gave users "the freedom to publish and share" (Weller, 2020). Dowling (2011) also stated that among the limited benefits of web 1.0 based English language learning were access to electronic material, computer graded assessments and access to wide variety web resources.

There were some drawbacks of web 1.0 as well. First, English language learners could use only lower-order thinking skills such as remembering, understanding and applying. Second, it was slow because it consisted of few writers for a large number of readers and therefore starving users for resources. They had to refresh the web pages every time they entered the new information. Third, it did not support interactive environment and two-way communication. Fourth, web 1.0 was lacking relevance in searching out any information.

2.2 Web 2.0

Web 2.0 is known as "a second-generation web services emphasizing online collaboration and sharing among web users" (Akbulut & KIYICI, 2007). The term was initially

used by Tim O'Reilly in 2004 in the conference brainstorming session (O'Reilly, 2007) which he called the second generation of web 1.0. It is also called as an evolution of web 1.0 that was introduced with a notion of "read, think and write" (Chaka, 2010). Therefore, learners are considered as the authors of web content. The concept behind the use of web 2.0 in foreign language learning was based on "interaction and immersion" and thus was transformed from "content-centric paradigm to social-centric paradigm" (Blessinger & Wankel, 2013) and offer low cost and easy access to digital, versatile and integrative tools to the English language learners. It changed the scenario for English language learners dramatically due to its focus on interaction and collaboration as Chang, Pearman, and Farha (2012) explained "technology and web 2.0 tools are supportive of knowledge construction, immersion in a foreign language, and interactivity across sites" (p.52). Thus, web 2.0 introduced communicative technologies that include mobile technology, blended learning technology that may foster more authentic and more interesting learning environment. These technologies allow foreign language learners to interact and collaborate virtually and establish personal communications (Shih & Yang, 2008). Web 2.0 enabled English language learners not only to edit the content but also to share the content of their own and hence differs from web 1.0 in content creation. Contrary to the static nature of content in web 1.0, web 2.0 appeared to be the dynamic one. It was introduced with the slogan "user in the content" in which the human factor was given more importance that increased the interaction of learner and the computer. Web 1.0 has only a few content creators with large number of content users, however, web 2.0 allows almost all users to create the content of their own rather than only consuming (Cormode & Krishnamurthy, 2008). It created the new wave of research that was emerged with the term "WELL 2.0" (Web 2.0 Enhanced Language Learning) that was the latest version of CALL (Computer Assisted Language Learning) (Martins, Moreira, & Moreira, 2014). This term represented language learning that involved the use of web 2.0 tools and applications using computers, mobile phones, laptops. The key factor introduced by web 2.0 which got the popularity is the social networking. It introduced the participatory culture and enhanced the ways of English interaction using various platforms because learners from different social and cultural contexts can create and share material with each other. It is a transformation from the learning activity to the networking activity in which the peers remain connected and work collaboratively beyond the classroom boundaries. Therefore, the current web is perceived to have a significant role in language learning beyond the classroom (Lai & Gu, 2011).

Web 2.0 technologies were argued to be meant for the ease of use of internet, content creation tools, and of the wider availability of free applications available online on the web (Coutinho & Bottentuit Jr, 2010). According to Buchem and Hamelmann (2011), web 2.0 tool offers a wide range of enhance 21st century skills such as creativity, critical thinking, collaboration, communication and digital literacy. Web 1.0 focused on managing the data, and explicit knowledge and information, whereas the focus of web 2.0 moved towards tools and methods for developing implicit knowledge that was derived from global participation and social interaction (Miranda et al., 2014). Web 2.0 tools expand the new ways of communication, interaction, cooperation, collaboration among learners by providing them increased ease of use in storing their data, creating their online pages, and in creating their online communities (Coutinho & Bottentuit Jr, 2010). Using these tools, learners can publish and share the data and content with their academic fellows, integrate various social software in their learning, and create the content. Web 2.0 tools increased the possibilities of interaction, deepened the bond among the community members and encouraged learners for sharing and collaborating (Martinez, 2003). It made learners more active, critical and creative by enabling them to produce the content. Silva, Mahfujur Rahman, and El Saddik (2008) state that web 2.0 promotes better student-teacher relation and interaction leading to friendly environment, helps learners feel more comfortable by being self-expressive, guide them through tools which stimulate their enthusiasm in forming their opinions, and develop their intervention and self-confidence. It also fosters student-student interaction empowering them with a feeling of being a member of learning community (Liou & Peng, 2009).

Another benefit of web 2.0 was that it provided learners an easy to access and easy to use online applications which enhanced learners' familiarity with the e-learning technology creating the learning environment user-friendly. Coutinho and Bottentuit Jr (2010) asserted four characteristics of web 2.0: (1) it focused the content; (2) it increased the opportunities of publishing independent contents of the users; (3) it expanded network effects due to learners' participation-based architecture; (4) due to the use of social software and collective user

intelligence, learners could share their common interests and experiences. Following are the some of the most popular web 2.0 tools which are considered “excellent tools for allowing learners to clarify concepts, establish meaningful link and relationships, and test their mental models” (Rennie & Morrison, 2013).

2.2.1 Blogs

Blogs are among the primary web 2.0 tools used in higher educational institutes. In 1990s, most of the teachers, students and researcher used weblogs (the term used for web blogs). Blogs are internet-based journals used by millions of users (Rennie & Morrison, 2013). This is a website where a user can produce an, continually updated diary-like presentation of information, which can be responded to asynchronously by readers and members of the blog’s community. They are “straightforward content management tools primarily used to build diaries or websites around some theme or subject area” (Benson & Avery, 2009). Blogs allow foreign language learners to create and develop learning communities and world-wide audience and provide multiple opportunities for them to engage in meaningful and authentic discussions (Downes, 2009). Blogs reinforce interaction to the great extent as other users can leave comment on the blog to build a strong themed discussion in an e-learning 2.0 environment. This tool enables learners to share the information and extend their discussions even beyond the classrooms. Chaka (2010) explains the multiple benefits of using blogs that includes online collaborative learning, expressing diverse opinions and perspectives, creating communities of learners and communities of practice, subjectivity, working on content producing projects, creating network-based discussion groups and constructing a corpus based on collective posts and comments (Chaka, 2010). However, the challenge of using blogs is “to somehow separate the useful information in the background noise of tens of thousands of self-publicizing blog sites” (Rennie & Morrison, 2013).

2.2.2 WIKIS

Ward Cunningham, in 1998, invented Wikis which brought the breakthrough in the field of e-learning. It is a “system that allows one or more people to build up a corpus of knowledge in a set of interlinked web pages, using a process of creating and editing pages” (Franklin & Harmelen, 2007). Wiki is the web 2.0 social software developed for easy communication and collaboration in which users could easily create, edit, track, revise, and monitor contributions (Weller, 2020). The difference between weblog and Wiki is that weblogs are used for personal information and Wikis lead to the collaborative work. As a web 2.0 tool, it allows learners to create, share and disseminate the information. This tool is implacable to not in English writing class but any skill-based class where learners can work collaboratively on a group project. Web 2.0 facilitates them in collaborating with each other, having dynamic interaction with their teachers and fellows, sharing knowledge in a learning community (Qian, 2007). Jee (2011) sees wikis as one of the most useful tools particularly in foreign language course as he found them “a very good tool for collaboration or collaborative writing in a foreign language classroom” (p.167). Duffy and Bruns (2006) enlist various educational benefits of wikis that include creating summaries, building annotated bibliographies and also using it as a presentation tool. Moreover, “one obvious benefit of technology for language learning is the creation of opportunities for students to use language in authentic contexts. Such activities encourage students to strive for autonomy in the target language” (p.79). Other advantages of using wikis include facilitating knowledge from diverse learners in order to create collaborative educational resource, serving as a repository of knowledge, fostering teamwork, enabling learners and teachers to co-author, co-revise, co-edit, and co-producing the content and annotated bibliography, and operating an online encyclopedia and dictionaries (Chaka, 2010).

3. Media Sharing Services

Media sharing services got popularity due to the development of digital device such as video cameras, cameras, telephone (which was used an audio device), etc. These applications enabled English language earners to search for and display various types of contents (Harmelen, 2008). Examples of such media include podcasts, video casts, and applications which share video, art, or any document.

3.1 Podcasts

The term podcasting is the collocation of two words i.e., Apple computer’s portable media player and broadcasting. “A podcast is an audio file which can be downloaded and

listened to either on an iPod or MP3 player for mobile study or a computer or laptop for location-based study" (Rennie & Morrison, 2013). They further explain that learners may also integrate video podcasts while using PowerPoint slides. This tool makes students active learners rather than passive receivers of information. Using podcast as an e-learning tool, learners can listen to the target language content multiple times.

3.2 Social media

With the invention of e-learning, there was a fear and danger that learners, while practising e-learning, would feel isolated and socially disconnected. However, e-learning produced multiple ways of student-teacher and student-student interaction and in result, it was called a social learning activity. With the advent of the web 2.0, the new media, termed as 'social media' was introduced which facilitated learners with digitality, hyper textuality, interactivity, virtually and networking simulation (Kara, Çubukçuoğlu, & Elçi, 2020; Lister, Dovey, Giddings, Grant, & Kelly, 2008). According to Gunn (2013), "education is on the brink of a revolution fueled by social media and social networking tools that are changing the ways people communicate, and knowledge is created, managed and shared" (p. 170). By using social media in e-learning, students have transformed their ways of learning as they are no more consumers of knowledge delivered to them rather, they have become creators of knowledge. This involves them learning foreign language effectively by engaged with their peers, teachers, virtual worlds and by authentic experiences.

This might be the reason that the use of social media began to increase rapidly in the field of learning and teaching (Latif, Hussain, Saeed, Qureshi, & Maqsood, 2019). These are virtual platforms available to users for connecting and networking. These social networking sites aim to create social rapport, develop peer e-learning environment, and to conduct commonly shared activities (e.g., virtual conferences, webinars, etc.). It allows learners to create their profiles, join their classroom and institute pages, form discussion groups, share notes, blogs and to upload photographs, videos, documents and other learning materials (Oradini & Saunders, 2008; Rennie & Morrison, 2013). Therefore, it made strong connectivity among learners, teachers and thus created the dynamic process of learning. English language teachers and learners used social media to disseminate the knowledge and information, announce the tasks and assignments, communicating to their peers for classroom projects in their target language, negotiating deadlines, etc. (Kara et al., 2020; Raspopovic, Cvetanovic, Medan, & Ljubojevic, 2017). Neier and Zayer (2015) investigated students' perceptions about using social media in foreign language learning process and their results showed students' inclination towards usage of social media. In the same study, researchers also revealed that their participants preferred using social media and e-learning tools for communicating with their peers and teachers over the traditional face-to-face discussions. Maqableh et al. (2015) also find the direct relationship between students' use of social media and academic success. Kara et al. (2020) conduct the research on the integration of social media in learning process in higher education. Their findings conclude that social media was the most important platform for communication that 21st century learners use for interaction. Social media developed students' communication, collaboration and critical skills and their overall learning process. It provided them opportunities for communication even beyond the classroom. It also helps them to create e-learning environment by sharing useful links, posting comments and creative content, and writing blogs. There are various popular social networking sites particularly among the learners of Pakistan Such as Facebook, Whatsapp, Twitter, etc. Facebook is considered as one of the most popular tools (Greenhow & Askari, 2017; Rodríguez-Hoyos, Salmón, & Fernández-Díaz, 2015).

Web 2.0 has some shortcomings too that includes the explosion of irrelevant information which may, on the one hand, confuse the learners, and on the other hand, leads to the disorganization and mismanagement of large amount of data (Dwivedi, Williams, Mitra, Niranjana, & Weerakkody, 2011). Second major concern related to the use of web 2.0 technology was the security risk. Web 2.0 applications are mostly accessible and open to all therefore it created the danger of leaking the information, hacking the data and performing malicious tasks.

3.3 Web 3.0

Web 3.0 is "an evolving extension of www in which the information can be shared and interpreted by other software agents to find and integrate applications to different domains"

(Padma & Seshasaayee, 2011). It is not essentially an evolution of web but is the advanced stage of web 2.0 and, therefore, is considered as a progression of the web which enables the web to be more open, connected and intelligent. Web 2.0 introduced the concept of real-time interaction whereas web 3.0 integrated intelligence in the field of learning. Using web 3.0 applications, English language learners can access the meaningful information instantly by filtering out erroneous data and in a personalized way (Miranda et al., 2014). The use of web 3.0, particularly for second language acquisition, is virtually unlimited. For instance, English language learners can use 3D educational virtual labs, and avatars that are associated with augmented reality and simulated environment used through internet technology where they can interact through movable avatars. These virtual worlds allow them to do 3D modelling, role-play, active involvements and creativity (Thiyagu, 2015). Secondly, students will be more autonomous by practising features of web 3.0, therefore, they will come across a paradigm shift from teacher provided content to student creation of content. Third, web 3.0 allows learners to have personal learning agents that search the most relevant and tailored information for them preventing anxiety and frustration. Web 3.0 tools, such as smart mobile technology, 3D interaction and visualization, collaborative intelligent filtering and distributed computing, allow learners to be active participants rather than passive and keep them engaged in virtual and collaborative and interactive environment (Marakby, 2020). Chen (2016) investigated EFL learners' perceptions and language practices in a task-based course in Second Life (one of the web 3.0 tools). The findings of the study indicated that EFL learners consider 3D resource in SL very supportive and facilitative in terms of linguistic and visual presentation.

Web 3.0 is also called the Data Web, the Semantic Web, and the Intelligent Web based on knowledge presentation and artificial intelligence theories. The term "intelligent web" referred to the intelligent response provided by web to the users and the functions of web that led users to get an effective, easy and quick access of the information they require. "Semantic Web" refers to the usage of semantic technologies published by web 3.0. At this stage, "the new data can be inferred from existing data and shared across applications with no human involvement or interpretation" (Sugumaran & Gulla, 2011). This new and smart data has now the ability to understand the meaning and relationships to the other data. Berners-Lee, Hendler, and Lassila (2001) explained this approach as "the semantic web is not a separate web but an extension of the current one, in which information is given well-defined meaning, better enabling computers and people to work in cooperation" (p. 37). It shows the results by interpreting the vocabulary and meta-data (data about other data) and is considered as "the first generation of METAVERSE" (Smart, 2014). Miranda et al. (2014) asserted, "to introduce semantics is to introducing meaning and relevance into the content" (p. 95). Therefore, it will not only display the required information, but will also comprehend the data and then it will show the results accordingly. Web 3.0 introduced the principles of collaboration, filtering, managing large data, cloud computing and mobility (Miranda et al., 2014). With the help of web 3.0 technology, intelligent machines do not only show the keyword searched by the user, but it also understands the content and interprets the context of that keyword with all its relevant information. Moreover, it also organizes the results and suggests the information related to the searched term. The main purpose of semantic web is to enable the computer systems to process the meaning of things as these semantically equipped computers will solve complex semantic problems. It is based on databases rather than documents and is also called "web of data" (Sofiadin, 2014).

One of the most important characteristics of semantic web is the effective implementation of a set of ontologies (Miranda et al., 2014). Hendler (2001) defines ontology as "a set of knowledge terms, including the vocabulary, the semantic interconnections and some simple rules of inference and logic for some particular topic" (p. 31). It provides a mechanism for getting web domain to integrate the content from various web sources and it also supports the sharing and reuse of knowledge. It points out to the common understanding of a web domain for a keyword and its relevant terminologies. Konstantinos, Penelope, Giannis, and Aglaia (2009) call ontologies as backbone of semantic web. Thus, due to their potentials and capabilities, web 3.0 tools are thoroughly embraced by various educational institutes. Semantic web has shifted learning from content-centered learning to the competence-based learning. Web 3.0 also invited some security risks for users for their data privacy. Due to the vastness of information, it created redundancy in the data.

Recently, Jacksi and Abass (2019) have compared all above mentioned three versions of web and concluded their study with a table (given below) explaining comparative characteristics of web 1.0, web 2.0 and web 3.0.

4. Conclusion

Over the time, English language learning has evolved through various developments of World Wide Web technology that by creating many opportunities for learning and practising the target language. This study used the comprehensive literature review to present the conceptual review of pedagogical implication of web 1.0, 2.0 and 3.0 in English language learning environment. It can be concluded that web-based learning of English language "increased authenticity, reduced anxiety with higher motivation, opportunities for learner-centered instruction, enhanced ownership and personal responsibility, significant flexibility in learning preferences and styles" (Jee, 2011). This study also discussed that web applications and tools play a vital role in promoting English language learning and enable learners to interact, collaborate and participate in their learning activities. According to Algosai, Albalhli, Khasawneh, and Melton (2017) "the conversion from web 1.0 or web 2.0 to web 3.0 is necessary to employ for future development and advancement of the web" (p. 24). It may also be expected that the web evolution will continue to evolve with the emergence of some more web functions that are vital for English language learning.

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