EVOLUTION OF E-LEARNING WITH WEB3

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Abstract - The internet has rapidly evolved and spread across the world to impact all aspects of our lives. E-learning represents the delivery of educational resources and learning through digital content. Results showed that learning online can be just as effective as studying offline. This paper discusses the evolution of the World Wide Web from web1 to web3 and how it revolutionized e-learning in the current generations. Moreover, the paper will outline the characteristics of web3 and its effect on e-learning.

1. INTRODUCTION

Despite the explosion of information generated by Web 2.0 standards, because of the number of authoring tools and sharing platforms available, it has also become more disorganized and complex, resulting in vast amounts of untapped information that users cannot access because it is buried in "white noise" –irrelevant data that inefficient search and organization paradigms cannot filter appropriately.

In the next generation of the Web, Web 3.0, intelligent agents and semantic standards will be used to organize it. In addition, e-Learning, one of the earliest and most common use of the WWW, is also changing. In the same way that the Web evolved from a "read-only" medium to one that allows students to "read-write-collaborate", e-Learning has evolved from a simple transposition of educational materials to online support to an entirely new approach to education that focuses on students'

Web2 is the system we use to access services on the internet today, and web3 is the evolution of web2 both philosophically and technologically. Here are the key points you would need to explain on web3:

1. The web1 era was about disseminating information (think: websites), the web2 era was about communication (think: Whatsapp), and the web3 era was about creation (think: IP ownership).

2. In terms of technology, web1 and web2 used centralized infrastructure to support online activity. You sign up for a Google account, and then Google has access to (and control over) everything you create with that account, such as emails, documents, and spreadsheets. On the other hand, web3 relies on decentralized infrastructure (like blockchain) to support verifiable transactions, individual ownership of intellectual property, and the empowerment of creators.

2. EVOLUTION OF WEB

Web 1.0 can be described as the early stages of the internet, where the content was static and websites primarily resorted to the HTML language., there was very little opportunity for users to effectively participate, making them essentially consumers of active participation, interaction, and collaboration. This approach information, but not creators of it. This leads to the common will be further emphasized by Web3, which may lead to virtual spaces of collaborative knowledge centered around active learning, student-centered applications, 3D visualization, and intelligent search agents based on semantic web to permit students easy, intuitive access to information.

BASIC CONCEPT OF WEB 3.0

Web 3.0 refers to the third generation of internet services for web apps and applications that will use machine-based semantic data understanding to provide a data-driven and semantic web. Web 3.0 strives to create more intelligent, connected, and open websites. Description of Web 1.0 as "read-only". Web 1.0 is essential "a system of interlinked hypertext documents accessed via the Internet"[9], with very limited user participation. However, for Tim Berners-Lee, the inventor of the World Wide Web, the intention and vision had always been to make the internet a collaborative space, where individuals physically separated by geographical, cultural, and language barriers would come together and collectively contribute to global information space[8].

In 2004, Web2 became a large and growing name. Web 2.0 refers to websites and applications that utilize user-generated content for end-users. The world was moving away from Web1, which only promoted content viewing. In web2 Users were encouraged to post their content like all sorts of things such as pictures, videos, comments, ratings, and so on.Web2 brought a social aspect of technology by empowering us to post whatever we desire. Today, we use Web2 technology nearly every day. In Web2, the application focuses on users and their interactions on the Internet. It wants them to create and share their own unique content.Web2 is all about dynamic content, and responsive layout, with a huge focus on UI/UX. Web technologies like AJAX, HTML5, CSS3, and surprisingly JavaScript rule. Features like tagging, ratings, and community forums are basically the norm. Web applications are designed API-first, in order to connect with other applications. That was a huge improvement from the mostly static website pages in Web1. You do not own what you post on Web2. In fact, everything that you post is owned by the

platform. With Web2 technology came lots of social media platforms, blogs, vlogs, podcasts, and so on. These allowed for communication and social interaction between people via content-creating techniques. People usually find content through keywords that the network asks them to apply.

Web 3.0 is all about a more transparent and fairer network where everyone can participate without fearing a loss of privacy and security. The shift from Web 2.0 to 3.0 is evident with the evolution of technology around us. Web 3.0 is sometimes referred to as the 'semantic web', '3D web' or 'spatial web'. It is about using new technology to add meaning to content and developing methods to interact with our environment. In the semantic web, the content will find you. Rather than you seeking information based on, say, keywords, your activities and interests will determine how information finds you and the format you need, and display it within your preferred channel. With Web3, the Internet is decentralized. Rather than empowering everyone, it focuses more on single users and getting them what algorithms are used for performing in the dimensionality reduction process.

Web 1.0	Web 2.0
Akamai	BitTorrent
mp3.com	Napster
Britannica Online	Wikipedia
Personal Websites	blogging
evite	upcoming.org and EVDB
page views	cost per click
Domain Name Speculation	search engine optimization
directories	tagging
stickiness	Syndication

3. CHARACTERISTICS OF WEB 3.0

A. Semantic Web
Through the development of intelligent machines that will be able to understand the content (instead of merely displaying it), learn what users require and suggest the adequate information that they are searching for [1], the Web will become far more efficient and powerful. However, this approach requires that semantic content be introduced into the Web, which is why Web 3.0 is also known as the Semantic Web.
The Semantic Web is essentially built on databases, instead of documents.

B. 3D WEB
Web 3.0 is a popular 3D internet application. It is a computer-based simulated 3D environment intended for its users to inhabit and interact via avatars [5]. High speed Internet, quicker processing speeds, higher screen resolutions, 3D gaming technology and augmented reality will transform the

Web browsing into a 3D experience, where you actually move through the virtual corridors of the Web, as a virtual avatar of your real self [1].

C. Social Media
Web 3.0 is built on a decentralized blockchain technology system and will offer everything a decentralized system can offer. These features of the decentralized blockchain technology contribute significantly to the characteristics of web 3.0, and these features affect the social media operations in web 3.0 dispensations. In the web 3.0 dispensation, there would be Data privacy in that there won't be involvement of a third party in your affairs. You can decide as you wish, keep your information from the public, and share the information you want to share. Also, this feature helps to solve the free speech hindered by web 2.0, where contents were regulated. On web 3.0, you can share contents you want to share and with who you want to share without fear of being sanctioned. Privacy while avoiding hacking Web 3.0 will offer you protection from hacking as it is with other decentralized systems. It is difficult to hack the system and the accounts on the system since the system doesn't involve a third party. At the same time, Web 3.0 will be offering the peer-to-peer feature allowing you to connect and network with people without an interception. Further, web 3.0 will offer for complete anonymity of its users. Users can even create a new value system to connect and interact. Another critical effect of web 3.0 on social media is the mining technique that features. Web 3.0 can analyze posts, comments, and likes from users. With this, it'll be easy to suggest content to users and ensure a great user experience for users. Also, Web 3.0 will significantly impact how information is stored on data hubs. While web 2.0 stores information on centralized storage like google, Microsoft and Amazon, Web 3.0 will allow users to store information on decentralized data hubs.

However, the challenge of storing data on decentralized much more complete and revolutionary way, fundamentally storage hubs is creating a power storage system. Further, because learning will become a personalized activity that Web 3.0 will offer users total anonymity in that they can have a unique identity and will be the only ones who gain access to their data and assets. By this, they don't even need the permission of external bodies to gain access, as they own their assets completely and can access them anytime. Experts say you will be able to access your assets and services from anywhere for free, and they will solely be yours.

4. TECHNOLOGY ON WEB 3.0

Semantic Web technologies can be utilized across a variety of application areas. Data Integration involving the merging of data held in different formats across various repositories can provide better, domain-specific search engine capabilities. The combination of these new semantic technologies, it is hoped will lead to the creation of intelligent software agents that will help facilitate knowledge sharing and exchange across the Web
In order to gain a basic understanding of the Semantic Web, one must become familiar with the terminology:

URI - URIs or Uniform Resource Identifiers are used to identify resources; associating a URI to a resource makes the resource accessible and retrievable.

Metadata - is data about data'; a structured method for describing content so it can be easily accessed [2].

RDF stands for Resource Description Framework, the data model of the Semantic Web.

RPDF - The Resource Description Framework Schema extends the RDF standard with added functionality to specify domain vocabulary and object structures. It provides mechanisms for describing clusters of related resources and the relationships between these resources [3].

XML- or eXtensible Markup Language is a language that allows data to be shared on the Web and information to be exchanged between different platforms and applications [2].

SPARQL- Is the query language of RDF.

Ontologies - Ontologies define the terms used to describe and represent a specific area of knowledge or domain and are "essential building blocks" of the Semantic Web [4].

Semantic markup - A semantic markup document is a file that describes the content of a Web page by using the terms defined in an ontology making the content of the Web page understandable by computers [2].

5. THE IMPACT OF ELEARNING IN WEB3.0

One of the big things of the third generation of e-Learning will be the ubiquitous access to learning resources with the use of mobile devices to virtually access anything, anytime, and anywhere.

It has been argued that eLearning 3.0 will transpose the borders and limitations of traditional, institutional educational systems in individuals can manage by themselves. The key tool in achieving massive multi-user platforms and features, leading to an explosion in collaborative learning.

Advantages of the Semantic Web in e-Learning

Delivery – through the established ontologies, learning materials throughout the Web are easily linked and reached through semantic queries

Responsiveness – the use of intelligent agents to organize and filter information leads to faster and more accurate results for user's requests

Accessibility – semantic queries lead to easier access to the needed content.

Personalization – ontologies will allow users to customize their searches and queries for material specifically suited to their needs.

Adaptivity – semantic annotation of content means that it can be easily adjusted.

Symmetry – the possibility of creating an integrated platform for all different learning activities.

Modality – active and quick delivery of content generates a more dynamic learning environment.

Authority – content management becomes cooperative as the Web becomes more decentralized.

3D LEARNING

Mobility and interactivity in e-Learning 3.0 will also be supported by the use of 3D Environments,

The concepts and approaches underlined by Web 3.0 in educational contexts are defined by the tools that Web 3.0 provide. In that sense, the authors analyzed the impact that particular tools will have in the future of education: 3D Wikis/Virtual Encyclopaedias, 3D Virtual Worlds/Avatars, Intelligent Search Engines, and Online 3D Virtual Labs.

A particular topic in the wiki could be accessed through audio/video and a 3D representation of the subject. The ability for students to interact in a virtual world, similar to Second Life, by means of avatars, would allow them to participate in new strategies, such as role-playing, simulations and educational games.

6. CONCLUSIONS

With Web 3.0, the ability to find information more easily and quickly has a number of benefits, but also disadvantages.

The reduced expense as machines will be internet-connected and provide access to knowledge. Changes in teaching teachers will be able to develop engaging and more complex assignments that are supported by a variety of resources. Learning students will spend less time gathering and integrating knowledge. Smart searches customized search capabilities will yield only information tailored to the user, preventing frustration and saving time. Personal educational administration uses the semantic web to describe courses and degrees so that it will be easy to transfer credits, and students can easily determine universities that will give them the knowledge they seek.

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