What will Web 3.0 bring to education

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Dan Jiang*, Master of Information Technology in Education, Faculty of Education, the University of Hong Kong China.

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Abstract

Every era of technology has, to some extent, formed education in its own image. It is believed that there is a mutually productive convergence between main technological influences on a culture and the contemporary educational theories and practices. As we are stepping into the era of Web 3.0, it is no surprise that the network has been one part of our daily life and it becomes one of the most important places for us to learn, work, entertain and socialize, especially for the digital natives. For many people, Web 3.0 still may be a new word in education or a future trend for them, but actually the Web 3.0 technology has been applied and it keeps changing the culture, theory and practice in education subtly. The article aims to discuss about the impacts on Web 3.0 on education and try to view the impacts in terms of culture philosophy and sociology.

Keywords: Web 3.0, Sociology, Education, technology, philosophy

*ADDRESS FOR CORRESPONDENCE: **Dan Jiang,** Master of Information Technology in Education, Faculty of Education, the University of Hong Kong China, *E-mail address*: bjiang@kennesaw.edu

1. What is Web3.0?

Web 3.0 is often called as Semantic Web, coined by Tim Berners-Lee for a web of data that can be processed by machines. The Semantic Web vision is one of data published on the Web in machine-readable formats, given formal semantics through the use of shared ontologies, and interlinked on a massive scale. These three ingredients enable large-scale data integration, ultimately for the benefits of users (Heath & Motta, 2007). Simply speaking, Semantic Web has the capabilities of understanding you, helping you sort through the information based on your preferences from large numbers of dynamic resources and providing you a report made with different types of multimedia. Semantic Web plays like an intelligent agent between you and network. With the development of Web 3.0, the description of Web3.0 has slightly changed. In 2009, Jim Hendler described Web 3.0 like that "Web 3.0 extends current Web 2.0 applications using Semantic Web technologies and graph-based, open data" (Figure 1). Hendler`s description reminds us Web 3.0 keeps the characters of Web 2.0 (interactional, participatory and sociable) and inputs new characters of semantic web and linked data (intelligent, personal and data-integrated) at the same time.

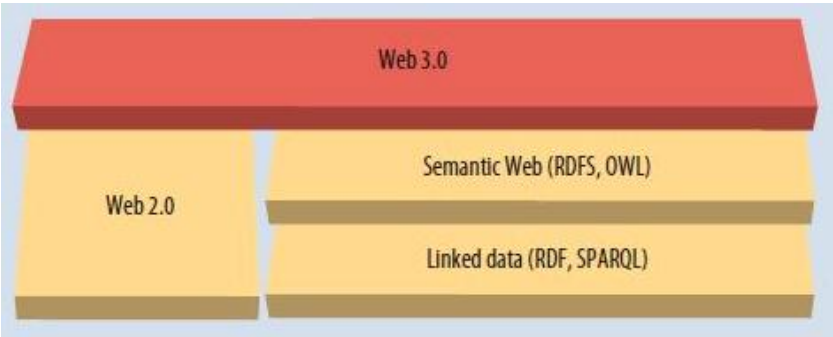

Figure 1. (Jim Hendler, 2009)

2. The Web 3.0 applications in education

After doing many researches, the main web 3.0 applications are portals, bloggers and online libraries. In the following part, we are going to introduce some typical portals using Web 3.0 technologies. For examples: Open ID is a free, open user account authentication system. Users having an open ID account can log in over 900 websites that support open ID account, therefore, the linked data resources have greatly made convenience for learners when they are searching information instead of having to log in different websites accounts to get information. Besides open ID many social networking have adopted this technology such as Face Book, Twitter, Google and etc.; Coddy , a highly free personal portal in which users can setup and decorate their personal pages according to their personal requirements (Tianqi, 2011). Moreover, they can grab any information and applications from other websites to their sites in Coddy. Beside, Google in recently years has started introducing the Web 3.0 concept into many products such as Google Site, Google+ and so on. This kind of personal portal have provided an overall learning platform for learners and it shows strong sense of learning personality which implies that learning in Web 3.0 is more inclined to individualized learning.

3. From Web 1.0 to Web 3.0

Some people believe that technology is just a tool to help us to satisfy our requirements while other people take the other view that the every development of technology leads our life and transform our ways of seeing/experiencing the world. The argument of these two competing opinions----which is the dominant one, human or technology just shows a close interaction between human and technology. First, standing on the instrumentalism side, as ancient human beings, we want to connect, share ideas, maintain relationships, understand the world around us, sustain ourselves physically and emotionally

regardless of technological advancement (Ohler, 2008). So far now, each leap of the web technology has just proved the idea: Web 1.0 as a tool to provide information; Web 2.0 as a tool to socialize with people; Semantic Web as a tool sort out information for personal needs. Then standing on the technological determinism side, from Web 1.0 to Web 3.0, each web X.0 technology reveals a different social network organization. In Web 1.0, the key character is readable. Users can only read and get the information through the network but they have less interaction with other users through the network. The social network of the web 1.0 is in alone units with no connection between them; In Web 2.0, the words, sociable and participatory stand out of the web characters. Users are connected by the web technology and they can construct their own things on the web. The social networks are shown that most of units are in close-connected and multi- interactional ways; In Web 3.0, understandable, mobile and personal pop up as the significant characters. Based on the functions of Web 2.0, the users in Web 3.0 enjoy higher liberty to use information and data across websites they can contact with people anywhere and anytime. The social network are similar to Web 2.0, but the units are considered to be more intimate with each other and it is more emphasized "individualization", which refers to that each units are their own information centers.

The coming of Web 3.0 era has arouse some educators` attention and one of them John Moravec has built up the following detailed table on that what education would be like in Web 3.0 by comparing education in Web 1.0 and Web 2.0 (Table 1). The table details the evolving ways we're all learning, trying out technology and growing as a community. In the digital learning environment of Web 3.0, students can learn everywhere and they are connected with other students and their teachers as well. Besides, some traditional but inherent roles of school and teacher tend be weakened and they are melted into the society. Additionally, the Web 3.0 digital learning environment makes teachers and students in a completely equal footing.

Table 1. (Cited in the Edudemic website)

	Web1.0	Web 2.0	Web 3.0
Meaning is...	Dictated	Socially constructed	Socially constructed & contextually reinvented
Technology is...	Confiscated at the classroom door (digital refugees)	Cautiously adopted (digital immigrant)	Everywhere (digital universe)
Teaching is done...	Teacher to student	Teacher to student & student to student	Teacher to student, student to student, &student to teacher
Schools are located...	In a building	In a building or online	Everywhere & thoroughly infused into society
Parents view schools as...	Daycare	Daycare	A place for them to learn, too
Teachers are...	Licensed professionals	Licensed professionals	Everybody, everywhere
Hardware & software in schools...	Are purchased at great cost and ignored	Are open source and available at low cost	Are available at low cost and are used purposively
Industry views graduate as...	Assembly line workers	As ill-prepared assembly line workers in a knowledge economy	As co-workers and entrepreneurs

4. The impacts of Web 3.0 on education

4.1. Learner in Web3.0 education

Based on the understanding of Web 3.0 technology and Web 3.0 education in the table1, Web 3.0 can be regarded as a brand new digital learning environment for learners, which is ubiquitous, intelligent, highly open and free. Living in the Web 3.0, learners will change their behavior and network habits when adapting to the new environment. In Bandura`s reciprocal determinism, there exists interplay among environment, person and behavior. That is to say, Web3.0, learners and their behaviors are mutually affected. Examples can explain the idea well.

Environment<=>Behavior: We used to surf the internet in specific places, like home, net cafe, office and school, but now we can get online in parks, streets, bathrooms... everywhere by using digital mobile devices. People`s behaviors changes because of the environment. In return, the popularity of using network drives people to expand their learning places, working places and socializing places instead of restricting in schools, companies, conferences and etc..

Person<=>Environment: As we know, in Web 3.0, we can set up and design our web based on personal preference including personal requirements, habits, and technology proficiency. Therefore, users have their personal web and all of them are different, which implies that the learning environment can be changed according to the learners` preference. In reverse, Web 3.0 also influences learners` attitudes, understanding and the use of Web 3.0 to some extent.

Person<=>Behavior: It is not hard to understand learners` personal issues affect their behaviors in Web 3.0. Learners who prefer to accept, more incline to search, read and watch; Learners who are active in socializing, usually participate more online chatting, discussion and collaboration; Learners who are imaginative or good at beginning ability, prefer to write and create. Although personal issues would affect the behaviors, but as network is a different environment from the real world, it may cause reversed behavior. That is one of the reasons why some shinny leaners` behaviors in the internet are actively or even aggressively. In turn, the acted behaviors can reinforce or reverse the person as well. Digital immigrant is the typical example to prove the point of reversing.

4.2. Self and Web 3.0

The ultimate beneficiaries of Web 3.0 are the users. The famous viewpoint of media is the McLuhan`s understanding in 1968: media as the extension of man, just like radio as the extension of ears and TV as the extension of eyes. Then how about Web 3.0? As Web3.0 is often called as Semantic Web, the significant feature is the intelligent technology. Hence, Web 3.0 is considered to be the extension of brain. Using the semantic Web, learners can get their required information quickly without spending time on sorting out through the resourceful network and they will have more time to do higher level work. Especially coupled with another character, highly freedom, Web 3.0 gives more power and space for users to create a proper online environment for themselves. It is believed that this kind of learning environment is able to help learners to achieve their 'self-actualization' (Maslow). That is to say, learners` impulse is more possible to be inspired in Web 3.0 so as to convert learners themselves into what they are capable of being.

However, everything has two sides. McLuhan also cautioned that every technological extension also resulted in the amputation or modification some other extension. The United States National Forum on Information Literacy defines information literacy as the ability to know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand (NFIL, 2005). But the ability seems can be done with the 'extension of our brains'. It comes up with the concern that someday in the future Semantic Web may substitute for our brain while we lose the ability of thinking. Consequently, we must alarm that Semantic Web may actually be a hinder for the cultivation of youngsters` information literacy.

4.3. Shocks on school

Reviewing the table 1 above, school in the web 3.0 is regarded as only a place to learn and it will turn to be everywhere and thoroughly infused into society. However, will this really come true in the future? No one can give an answer for sure. Selwyn (2011) described schools as over-conservative, monolithic and unwieldy institutions that are actively resistant to change and innovation. He also addresses the digital disconnect exists between students and school, comparing the ICT use of student inside and outside school. Do you really think Web 3.0 technology can break the mould of schools? How will Web 3.0 make it freely open? If the "foresee pictures" are true, how will schools be like? These doubts and questions lead us to think over the Web 3.0 and consider the possibilities of John Moravec`s foresee in table 1:

Firstly, Web 3.0 will come after mobile technology and the development of mobile technology has well prepared for the coming of the Web3.0 era. So far now, large numbers of students in school own their smart phones, tablets, digital cameras and etc. or have the experiences of using these mobile devices at least. With the technology development, many digital devices can be connected to the internet directly, which means students today are getting more and more intimate with the network and they increase the reliance on the network no matter in socializing, playing or learning. Actually, the web has become a place for their learning. The popularity of virtual classroom, forums, mobile campus and other online learning communities have reminded those substantial schools again and again that they are not the only places suitable for students learning. If they are still keeping sealed to society, then finally it will be left by the society.

Secondly, during Web 2.0, we are enjoying millions of open free online sources, in the meanwhile, facing with the reckless information, we have to spend quite time to look for what we need and judge its reliability. But Web 3.0 has well solved the problem. Thanks to the technology of Semantic Web, we can easily get our wanted and trustful information and data in a minute. The leap of technology actually threatens schools once again because schools are always taking the authenticity and authority as their shields when being compared with the web, but now the shields cannot 'protect' them any longer.

Thirdly, the data-linked technologies (RDF, SPARQL) of Web 3.0 help students get more touch with abundant knowledge easily. Hence, students are likely to be more knowledgeable than their teachers on courses. In this situation, if schools still keep complacent in what they teach and give for their students, their authority and reputation may probably be affected.

Brief speaking, what we are discussing here is not judging that school is not important for education anymore but we hope schools to realize that they must adjust themselves with the pace of technology. It is time for them to open and turn to be smart.

Conclusion

Web 3.0 not only brings us a brand new environment for education, but also provides humanized technologies for no matter for users or learners. However, Web 3.0 also brings with the challenges and potential risks for schools and learners. It is essential for everyone to get ready in order to adjust the new digital learning environment and build a suitable way for school in the Web 3.0 education. Are you ready for the Web 3.0 education?

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