

Research on the Scientific Development of Online Education Network Ecosystem

Wei Sun^{1,3}, Natalia B. Godz², Xuemin Liu^{3*}

¹Post-graduate student of the Department of Philosophy, National Technical University, Kharkiv 61002, Ukraine

²Department of Philosophy, National Technical University, Kharkiv 61002, Ukraine

³School of Educational Sciences, Jiamusi University, Jiamusi 154007, China

*Corresponding author: Xuemin Liu, sunwei339@163.com

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Abstract: This paper analyzes the various manifestations, and the causes which contribute to the online education network ecological crisis, further clarifies the relationship between the development of the network, and human society. Recommendation, and measures which can be applied to the scientific development of the online education network ecosystem was also included in the paper.

Keywords: Online education; Online ecosystem; Sustainable development; Network ecosystem

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1. Introduction

With the rapid development of the computer and network technology, as the world's largest network, the Internet has an increasingly extensive and profound impact on the social politics, economy, culture and education. Due to the limitation in the time and the space, it has caused many changes in the people's lifestyle, learning method, working environment, entertainment types, and also in the humans' thinking. At present, the Internet is one of the most important online education systems, further with the rapid development of the Internet technology, it also brings a lot of convenience to people, as well contributes to some disharmonious factors. Therefore, it is important to joint efforts by everyone to build and create a harmonious, and scientifically developed online education ecological network to achieve the goal of online education.

2. Network ecosystem, and its connotation

2.1. Definition of network ecosystem

The Internet provides the users with a broad and free space for mutual communication, cooperation, and resource sharing. This space has actually become the second living space know as cyberspace for the people, in addition to their normal living environment ^[1]. The cyberspace contains many elements, such as network information, technology, culture, policies and regulations, with people roaming in the network world. These elements together, will further affect the healthy development of the entire computer network, which is very similar to the natural ecosystem. Natural ecosystem is the biological community, and its living environment, as well as the biological populations who are closely linked, and interacted with each other.

Through material exchange, energy conversion, and information transmission, the ecosystem occupy a certain space, has a certain structure, and performs certain functions, with a dynamic balance of the functions as a whole system, therefore the entire computer network environment, may referred as the computer network ecosystem, with the internal elements of the computer network ecosystem should be studied as a unified whole.

In additional, from the perspective of social ecology, the rapid development of the Internet network will lead to a series of problems consists of various factors between the network and other related social environments. Further, the network ecology is formed when the people analyze the interaction, and mutual influence between the network and its ecological environment from the perspective of connection development, therefore, the network together with its ecological environment formed the network ecosystem.

2.2. Social properties of network ecosystem

The network ecosystem has obvious technical attributes and social attributes, with the social attributes as the essential attributes. The Internet technology is the basic material for the construction of cyberspace ecology, where the technology is a product created by the peoples through a social practice, further reflecting the needs of human development in the reality. From the historical materialism view, the basic needs of people's survival, is their ability to engage in the production of material, and produce a certain division of labor and communication practices during the production activities, further form the communication practice. In addition, different communication relations, and communication methods will shape and forms different social space. Based on the people, and their practical activities to understand all the historical activities, and processes of human beings, leading to the realization that the emergence and application of Internet technology are the result of people's understanding, and transformation of the objective world in the production and life practice. The formation and development process of cyberspace, is a process that is created through the human social practice, therefore, although cyberspace has its own unique characteristics and operating laws, it is ultimately a part of a social space, an extension and expansion of real social space under the guidance of the new technologies.

In summary, in the entire cyberspace ecosystem, people are always as the core of the interaction between people and technology, people and information, people and the space environment, and people and people forming the entire network ecosystem, subsequently lead to an increase in the discordant factors in the online education network ecosystem.

3. Discordant factors in online education network ecosystem

Natural ecology is a network of living things between the natural environment, and their living environment, meanwhile the computer network is an interaction between the people and information, where it provides a new route for the life to exist, subsequently creates a new ecological environment for human beings. At present, the computer network has become the second living environment of the human beings. However, some disharmonious factors starting to develop in the living environment, affecting the online education process by constantly destroying the balance of the entire network ecosystem development, which is likely to cause a network ecological crisis.

3.1. Network ecological environment pollution

Information is one of the main components in the computer network system, and the main function is to transmit and exchange information in various forms, including text, animation, sound, and video. Meanwhile, the network ecological environment pollution refers to the network information pollution,

including uncontrolled information transmission, and unhealthy information content [2]. Currently, spam emails and advertisements, Internet pornography, Internet rumors, and others have seriously polluted the network environment, leading to the network immorality. However, up to date, there is no an effective information supervision or filtering mechanism has been formed, therefore the pollution of the network ecological environment has caused huge damage to the network ecosystem. Additionally, this type of pollution and damage can directly lead to the distraction of learners' learning attention, further reduce the learning resources and materials during online education, resulting is the decline of learning efficiency and effect.

3.2. Security issues of network ecological environment

As the second living space of the human beings, the computer network is under the threat of computer virus at all the time, however the virus defense mechanisms, and the killing system is relatively lagging behind [3]. Additionally, cybercrime such as cyber theft, cyber fraud, digital sabotage, and cyber instigation are increasing yearly, the private space on the Internet is becoming lesser, and the phenomenon of being peeped and violated happens from time to time, therefore the computer network has become no longer safe, additionally, put everyone in the danger, therefore an effective solution to overcome the network security problems are imminent. In summary, online education requires a safe network environment, otherwise, the loneliness, and lack of emotional communication caused by the spatial separation between people will be infinitely magnified, subsequently will affect the quality of the online education [4].

3.3. Unreasonable generation, and distribution of information resources

The original purpose of creating the Internet is for the people to communicate with each other, and share information resources, however, the current computer network is full of useless and information, further the proliferation of information seriously affects the traffic on the network ecological environment. Additionally, when people search for useful information which are suitable for themselves, it is difficult to find it immediately or could not find it, reflecting the unreasonable and scarce distribution of the information resources in the network environment. The unreasonable distribution of such information resources will directly affect the development of online education. In the recent years, online education environments such as MOOC platforms, and interactive learning platforms have emerged, however, the Internet and the education platforms influence each other, where the online education process could not exist independently from the Internet [5].

3.4. The contradiction between the diversity of world cultures, and the global integration of the network

Just as biological diversity is an important factor in maintaining ecological balance, cultural diversity is also the key for protecting world cultural heritage, and maintaining the ecological balance of the world culture. Diversity is influenced by the intellectual hegemony, and dominant cultures [6], subsequently affecting the online education process.

4. Scientific development of online education network ecosystem

Based on the discordant factors as mentioned above, it is not difficult to find that it is mainly caused by the lag in people's ideology, morality, organization, and management. In order to prevent the emergence of the ecological crisis in the online education network, and to enable human beings to make reasonable use of this second living space, it is important to ensure the healthy development of the online education network

environment by considering a reasonable scientific path. To achieve the goals, following aspects as described below can be used ^[7].

4.1. Establish a green network

The green network refers to a harmless and pollution-free network, which can take measures to remove unhealthy content on the network, further overcome unethical behaviors on the network, thereby creating a fresh and harmonious green space for the network users ^[8]. Firstly, it is important to use the public opinion, and moral standards to persuade and educate bad network actors, in order to make them understand the essence of protecting the network ecology, is to protect the living space of human beings ^[9]. To block and prevent the network ecological environmental pollution, one should treat the network crisis like their own environmental crisis, and treat the Internet like the earth, to generate a psychological pressure ^[10]. Secondly, policies and regulations should be used to monitor, and punish the people, who try to destroy the stability of the network environment, and try to endanger network ecological security ^[11], where the law should act as a deterrent. Third, strengthen the network technical supervision, closely monitor the behaviors and phenomena, which can damage the network ecology, and lastly, take timely measures. In conclusion, once the network ecological environment becomes better, the online education environment will naturally become better. Further, without the interference of bad information, the quality of online education can be guaranteed ^[12].

4.2. Promote the rational production, consumption and decomposition of network information

Borrowing the term from ecology, the elements in the network ecosystem can be divided into producers, consumers, and decomposers of network information. In the network system, the producers of information are referred to the organizations and individuals, while the consumers are the organizations and individuals who browse and use the information, and they also can be called as the subjects. However, both the producers and consumers may create some online garbage for their own interests regardless of the network norms ^[13], therefore, a special personnel or organizations also known as a decomposer should take the responsibility to maintain a clean network environment, and regulating the normal order of the network ^[14]. In summary, for the healthy operation of the entire computer network ecosystem, a reasonable network information production, consumption, and decomposition system should be established. Additionally, to avoid the occurrence of the network ecological crisis, special organizations or special personnel should be developed or hired respectively to be responsible on these matters ^[15-16].

4.3. Strive to create a long-term sustainable network model

Everyone is amazed at the network civilization that humans have created for decades, however, in the face of the current development dilemma, one should ensure the sustainable and healthy development of the Internet, therefore people should strive to seek and create a reasonable network development model, similar as the natural ecosystem, which has the characteristics of maintaining its own system balance dynamically ^[17]. Internal balance should intelligently clean up the garbage generated in the entire system, improve the level of self-adaptation and self-purification of the system, and lastly ensure that the system develops in a healthy direction, thereby providing a high-quality environment for online education ^[18-20].

The network ecosystem, as the second living space of human beings, and as the platform for human survival in the future, thereby is the basic environment for the online education. The healthy growth of the network ecosystem is related to the fate and future of the entire human being. Only by promoting the construction of network spiritual civilization, we can achieve the path of scientific development.

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The authors declare no conflict of interest.

Author contributions

W. S. and N. B. G. conceived the idea of the study. W. S. and X. L. wrote the paper.

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