ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202204_5(4).0086

A Review of the Research Hotspots and Trends of Digital Education

-- Analysis based on CSSCI (2010-2020) Literature

Mengjie Hou[1, a]

[1]School of Public Administration, Sichuan University, Chengdu, 610041, China

[a]1026529763@qq.com

Abstract

Digital technology has profoundly changed the way people work, live and think. The ability to use digital technology critically and creatively has become the main educational goal of governments. From 2010 to 2020, the research system of digital education in China has been further established and perfected, which has set off the research upsurge of many domestic scholars. Based on the sample of CSSCI periodical papers in CNKI database, this paper analyzes the hot spot and trend evolution of Chinese scholars' research on digital education. Through research and analysis, it is found that "digital learning", "teaching mode", "online learning" and so on have become new research hotspots.

Key words

Digitization; Education; Research hotspots; Trends.

1. Introduction

Digital technology permeates all kinds of industries of human social system, and promotes the all-round changes in all fields of human social production and life with new forms of production, new mode of production, new mode of communication and new mode of thinking, which has led to the rapid development of digital economy, information economy, network economy and knowledge economy in the world, and the digital age has come. Education is good for the country, and education is the best for the country. Education is the cornerstone of national development, and quality education is the yearning and expectation of the people for a better life. The 21st century is the digital age, education needs to speed up the digital reform facing modernization, from the idea, the mode to the process reengineering to realize the omni-directional, three-dimensional system innovation, shoulders the educational responsibility and the mission of the new era.

2. Literature Review

The philosophical thinking about the digital society provides us with a possible interpretation framework. A fundamental enlightenment is that we can neither avoid a series of transformational facts provided by the digital society, nor sink into the virtual pleasure woven by the digital survival. Always regard human beings as the starting point of all theoretical concerns and practical logic, which is also the focus of pedagogical concern. In response to the major changes in the digital society and digital survival, should education change? How did it change? Change what? What are the challenges and obstacles? This series of problems is the hard work of the field of education.

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202204_5(4).0086

Yang Yinfu believes that the educational changes in the digital age are reflected in the changes of resource form, teaching form, school form and social form [1]. Some researchers put forward that in the face of the changes of education in the digital age, the mode of education should be more individualized, the educational information should be more extensive, the educational environment should be more intelligent, and the educational evaluation should be more intelligent. These new requirements promote the reform of education, but also make the reform of education encounter some resistance, that is, the depth of learning is questioned, the lack of technology-led classroom, and the construction of teachers lags behind [2]. The influence of digital society on education is profound and omni-directional, and the opportunity and challenge of artificial intelligence to education is more urgent. Tang Hanwei's question on "how education will exist in the era of artificial intelligence" shows that thinking and answering these deep questions will be the key to determine how far artificial intelligence can go in education and even in the future society [3]. Wang Su believes that artificial intelligence and education are the relationship between two-way empowerment, which is mainly reflected in three aspects: empowerment management, enabling students and enabling teachers [4]. Yu Shengquan's thinking on the future role of teachers in the era of artificial intelligence further reveals the 12 roles that teachers may play in the future, including teaching assistants, analysts, coaches and so on [5]. In addition, the dialectical thinking on the "change" and "invariance" of education suggests that the essence of education and the needs of students are the "immutable" principles and ways of education that run through the "change" of artificial intelligence education [6]. Based on the innovative construction practice of national planning teaching materials, national excellent teaching materials, curriculum multimedia dictionaries, learning self-diagnosis software, network courses, e-books and other innovative construction practices, Chen Lin has carried out multi-dimensional research on the construction of three-dimensional resources [7]. Luan Xuedong analyzes and looks forward to the trend of the development of teaching materials for in-service teachers under the digital background, and puts forward that the development of teaching materials must adapt to the development trend of individualization, modularization and three-dimensional development, and realize the transformation from "teaching materials" to "learning materials"[8].

The deep application of artificial intelligence will shake our original understanding, judgment and pursuit of education in the sense of Noumenon, thus resulting in unprecedented confusion and anxiety: "replacing the human brain", what is the significance and value of education; "man-machine integration", how to change the way and nature of education; "losing control", how to ensure the value choice and direction of education; and "moral problems", what kind of ethical choice education will face.

3. Research and Analysis of Data Sources

Based on Bradford's law, most of the key literature is usually published in a small number of core journals [9]. Therefore, the CSSCI database in CNKI is selected as the data source of the research literature. This paper focuses on the related research contents of digital education, in order to explore its research key issues and research system, so "digital" and "education" as the subject words in the CNKI CSSCI database for advanced retrieval, a total of 1436 articles were searched, the time span is 2010-2020. CSSCI source periodical literature has high academic research value, which can effectively reflect the hot spots and frontiers in this field. The authoritative database also ensures the scientific nature and accuracy of the analysis sample source, and reduces the research error. In order to further ensure the representativeness and accuracy of the selected literature, this paper selects and eliminates the selected literature based on the retrieval results, and eliminates the low correlation literature and non-relevant literature, and finally obtains a total of 1255 literatures for research and analysis.

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202204_5(4).0086

4. Analysis of Research Status

4.1. Analysis of Literature Volume

2010 is an important year for China to promote the construction of digital campus in an all-round way. In the outline of National medium-and long-term Education Reform and Development Plan (2010-2020), the contents of educational informatization are put forward comprehensively and concretely, including the construction of modern distance education, the construction of campus network in primary and secondary schools (including rural areas), the construction of digital resource base, the construction of digital library and virtual laboratory. As well as the establishment of the basic information base of national and provincial education, and so on. It is mentioned in the Ten-year Development Plan for Educational Informatization (2011-2020) issued in 2012 that a system of educational informatization with Chinese characteristics will be initially built in about ten years, so that China's educational informatization as a whole will approach the international advanced level as a whole and promote the scientific development of education. As shown in fig.1, the volume of literature has shown a steady upward trend over the decade 2010-2020. In March 2021, the 14th five-year Plan for National Economic and Social Development of the people's Republic of China and the outline of the long-term goals for 2035 were published, listing the part of the digital economy as a separate article. In order to speed up the construction of the digital economy, the digital society and the digital government, the manufacturing industry urgently needs to transform and upgrade under the new pattern of the digital economy, and more intelligent craftsmen are urgently needed. Under this realistic background, talent training has become the key thrust of the digital transformation and upgrading of the industry, and the research of digital education will still be maintained at a high level.

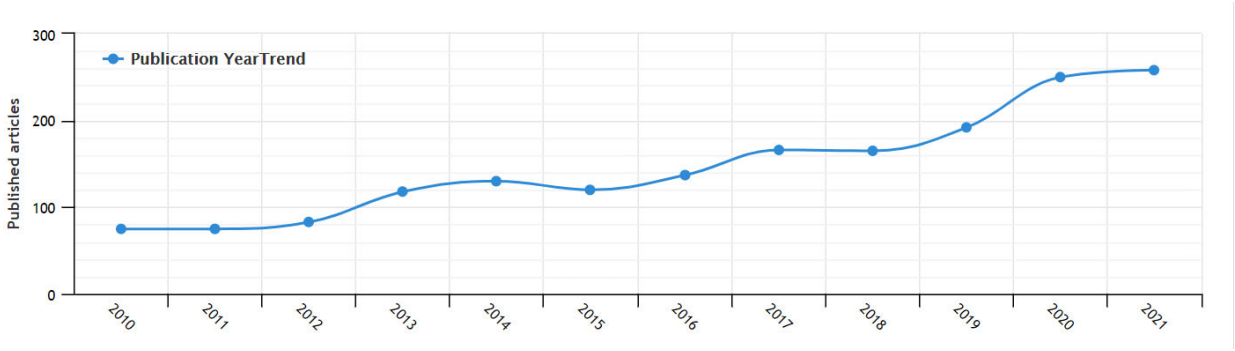

Figure 1. Annual distribution of research volume in digital education

4.2. Analysis of the Author and Organization

Table 1. List of the top 10 scholars published in 2010-2020

Author	Volume of documents issued	The organization in which it is located	Author	Volume of documents issued	The organization in which it is located
Zhu Zhiting	14	East China normal University	Chen Lin	10	Jiangsu normal University
Wu Di	14	East China normal University	Wang Hongmei	10	Jiangsu normal University
Wang Youmei	13	Wenzhou University	Liu Qingtang	9	Huazhong normal University
Ren Youqun	12	East China normal University	Gu Xiaoqing	8	East China normal University
Huang Ronghuai	12	Beijing normal University	Sun Zhong	7	Capital normal University

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202204_5(4).0086

The academic research ability of scholars is generally reflected in the amount of papers published. From Table 1, we can see that Zhu Zhiting and Wu Di of East China normal University have the largest number of papers, 14 articles, followed by Wang Youmei of Wenzhou University, which is 13 articles. Seven people published more than 10 articles.

East China normal University has the largest number of papers, 86 (see Table 2), followed by Beijing normal University (76) and Wuhan University (64). The top 10 organizations have published more than 20 articles.

Table 2. 2010-2020 institutions with the top 10 volume of digital education research

Establishment Name	Volume of documents issued	Region	Establishment Name	Volume of documents issued	Region
East China normal University	86	Shanghai	Jiangsu normal University	43	Jiangsu
Beijing normal University	76	Beijing	Nanjing University	40	Jiangsu
Wuhan University	64	Hubei	Northeast normal University	33	Jilin
Huazhong normal University	62	Hubei	Zhejiang University	31	Zhejiang
South China normal University	50	Guangdong	Southwest University	28	Chongqing

Through the analysis of the author with the help of the relevant software, it is found that most of the authors have a certain cooperative relationship. The closer cooperative relationship is Zhu Zhiting, Wang Youmagnesium, Ren Youqun, Chen Lin and other authors as the center of the team. As shown in tables 3.

Table 3. 2010-2020 Cooperation among authors of Digital Education Research

Core author	Team members
Zhu Zhiting	Gu Xiaoqing, Xu Zhe, Fu Wei, Qian Dongming, Guan Yuqi
Wang Youmei	Yang Xiaolan and Wang Juan
Ren Youqun	Li Feng and Zhang Jin
Chen Lin	Li Fan, Liao Xiaogang, Zheng Xudong, Yu Shengquan
Zhong Shaochun	Lu Peng and Zhou Dongdai

Finally, through the co-occurrence analysis of the institutions, it is found that the Department of Educational Information Technology of East China normal University, the Institute of Education and Research of Jiangsu normal University, the Institute of Modern Educational Technology of Beijing normal University, the School of Information Management of Wuhan University and the School of Educational Information Technology of South China normal University have extensive research on digital education. On the whole, these institutions are mainly the educational research institutes and educational information technology colleges of colleges and universities, and there are a lot of related research on digital education.

5. Analysis of Research Results

5.1. Analysis of Hot Spots Based on Keyword Clustering

Using software to investigate the research hotspots of digital education, the data from 2010 to 2020 are sliced for one year, and Top N ≤ 50 is set up. The key words generated are shown in Table4 below. At the same time, taking "digitization and digital learning" as the core, multi-direction and multi-aspect divergence, eight clustering including digitization, digital learning,

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202204_5(4).0086

electronic schoolbag, teaching mode, information technology, learning analysis, public library and online learning are intercepted.

Table 4. Information related to the top 20 keywords

Count	Centrality	Year	Keywords
82	0.52	2011	Educational informatization
72	0.23	2011	Digital publishing
51	0.27	2010	digital gap
38	0.09	2011	Talent training
36	0.06	2010	Library
34	0.02	2010	Digitization
34	0.09	2013	Digital education resources
30	0.12	2012	University library
25	0.09	2017	Digital humanities
24	0.12	2018	artificial intelligence
23	0.09	2013	Big data
23	0.14	2014	Digital literacy
22	0.13	2014	USA
22	0.06	2014	Digital textbook
20	0.07	2014	education equality
20	0.06	2010	Digital media
19	0.03	2014	Wisdom education
19	0.06	2014	Digital age
19	0.12	2012	Information literacy
18	0.06	2018	Digital economy

After summing up the relevant research contents of scholars, this paper holds that digital education includes the following research hotspots:

5.1.1. Science and Technology Is An Important Support for Digital Education

We often say that the first productive force is science and technology, human society continues to develop and progress, science and technology is the ultimate decisive force. No matter what work we do, we should attach importance to the power of science and technology, especially in the current Internet era, but also pay attention to giving full play to the guidance and leading role of science and technology. With cloud computing technology, users can access virtualization resources such as computers, networks, storage, development platforms, or applications [10]. The technical personnel of higher education institutions can pay closer attention to the needs related to the task, so that higher education can not only maintain the quality, but also meet the new learning needs and information technology services under the condition of tight budget. Big data technology through the collection and analysis of learners' age, personal habits and learning behavior and other related data, to provide learners' attention to learning content, help to carry out personalized teaching, promote learners' personalized learning. These technologies can enhance learners' ability and create personalized student files at a lower cost, which is helpful to create a unique course content through online learning system and improve traditional education and teaching [11]. Artificial intelligence technology can promote the individualization of the enrollment process, identify the learners who may successfully obtain a degree, help teachers identify the progress of learners, or assist learners to control the learning process when there are differences in their understanding [12]. The application of artificial intelligence in higher education can provide teachers, learners and parents with continuous feedback on learners' learning progress. In addition, it can also be combined with learning analysis and other technologies to act on higher education teaching and effectively enhance the competitiveness of higher education institutions. As the driving force of the digital transformation of higher education, emerging technologies promote more

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202204_5(4).0086

flexible education because of its flexibility and not limited by time and space, thus indirectly increasing the possibility of learners receiving education. The innovative application of different technologies plays an important role in the teaching process of higher education, which can improve the teaching process of higher education, solve the problems existing in traditional education, and finally improve the teaching effect of higher education.

5.1.2. Online Education Is the Mainstream Direction of Digital Education

The outbreak of COVID-19 epidemic situation has disrupted the traditional educational order and made the face-to-face traditional teaching method face to face with great challenges. In order to ensure that students stop learning during the epidemic period, teachers stop teaching, online teaching has become a highly respected teaching form. Because the early online education has not been fully developed, there are many problems in teaching, such as the paralysis of live broadcast network teaching platform, network Catton, unclear knowledge expression and so on, which is more prominent in colleges and universities with low level of information construction [13]. Therefore, how to promote the reform of traditional higher education teaching, carry out effective online teaching and coordinate the relationship between online teaching mode and traditional teaching mode is the key problem to be solved by leaders of higher education in the period of epidemic prevention and control. Leaders of higher education need to realize that online education is not the direct relocation of traditional teaching on the network teaching platform, but provides learners with high quality, flexible and personalized new educational services with the help of information technology. The use of online education and open education resources has given teachers and students a new role. Teachers should abandon the traditional lecturing teaching and adopt a student-centered, flexible and motivational teaching method to make learners' learning more autonomous and collaborative. Leaders of higher education need to cross the "cognitive threshold", take online education as the starting point, promote the information construction of colleges and universities, promote the individualization of teaching process, the scientific management of education, the process of educational evaluation, the humanization of educational service, innovate the education and teaching system, and promote the reform of higher education [14]. Digital teaching platform is an important tool to meet contemporary educational standards and carry out educational and teaching practice [15]. It is necessary to cultivate the ability of teachers and students to use digital teaching platform, improve the digital literacy of teachers and learners, make rational use of digital teaching infrastructure, and improve the efficiency of education and teaching, such as flipping new teaching modes such as classroom, game teaching, augmented reality, virtual reality or mixed reality, so as to increase the coverage of education and the transmission rate of knowledge.

5.1.3. Rational Allocation of Resources Is the Key Thrust of Digital education

It is necessary to reconstruct digital resources so that data can provide information for decision-making, power for artificial intelligence, help predict and manage, and provide the possibility of opening up new sources of value. In the process of promoting the information construction of colleges and universities, attention should be paid to the construction of open educational resources system. While constructing the online curriculum system of our university, colleges and universities need to establish cooperative relations with other universities or units, provide corresponding technical support and services through resource sharing, and ensure the normal development of online teaching activities in schools. In addition, we should actively promote the deep integration of emerging technologies and classroom teaching, realize technology empowerment education, and provide technical support for the digital transformation of higher education. The integration of artificial intelligence, big data, learning analysis and other emerging technologies and education is helpful to innovate the learning environment, enhance learners' learning experience, help learners to construct their

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202204_5(4).0086

own knowledge system, and promote learners to learn actively. The dispersion of data management and educational resources in the informatization of colleges and universities is serious, which hinders the use of information technology in colleges and universities to effectively promote the reform of teaching and scientific research model [16]. At present, the lack of systematic planning of information management in colleges and universities leads to extensive management, waste of resources and low work efficiency. We should establish an open and flexible teaching resource construction system, clarify the division of responsibilities of the professional team within the organization, plan and implement the teaching information construction work, avoid the repetitive work of the development and management of teaching resources, improve the utilization rate of resources, and promote the popularization and sharing of high-quality resources. Without information technology, there is no modernization, there is no high-quality digital education resources supply, digital education is only a castle in the air. With the rapid development of artificial intelligence big data, block chain and other technologies, the content, form, supply and demand system of digital education resources have been put forward higher requirements. The characteristics of the times of digital education resources determine that its allocation mechanism must have a systematic top-level design, the construction of a good digital education resources allocation ecology is a long-term optimization and improvement process. Facing the main allocation contradictions of the current digital education resources, according to the actual needs of teachers and students, adjust the allocation structure, construct the allocation mode of digital education resources to meet the current educational needs, and fundamentally realize the effective allocation of digital education resources.

5.1.4. Information Security Is the Basic Guarantee of Digital Education

With the wide use of digital technology, the security and compliance of educational data are facing severe challenges. We should formulate information security strategy, improve information security facilities, pay attention to the protection of data privacy, and promote the healthy and sustainable development of higher education. Information technology organizations should help schools to develop sustainable technology investment programmes, using technology to reduce or control costs, that is, to require information technology investment to be consistent with major school development projects and major decisions, and to develop sustainable investment programmes for digital transformation technologies. With the increase of data value, information security risks and privacy issues will also multiply. Sustainable strategies to ensure data security and protect privacy are therefore essential. There is a new dimension of sustainable development, that is, information security. The sustainable development strategy of data requires information security to protect the confidentiality, integrity and availability of data, as well as the privacy of data. Higher education institutions also face great challenges in protecting information security. Over the past five years, information security has been ranked at the top of the top 10 information technology issues. The risk of personal information disclosure is gradually increasing, which makes the solution of privacy issues more urgent. The development of artificial intelligence, social media and other technologies, promote the development of society, life and learning, but also provide a hotbed for the breeding and dissemination of pseudoscience and false information [17]. In order to operate normally and orderly, the education system must attach great importance to information security, formulate information security strategy, earnestly maintain the security of educational data, enhance the awareness of information security of educational managers, teachers and students, and add information security posts in the information construction team [18]. To reduce the hidden dangers of network security, we should not only improve the awareness of information security, but also strengthen the technical protection through the prevention and control of network viruses and the innovation of wireless security technology, and innovate the ways of information security protection, such as fuzzy processing of data, so

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202204_5(4).0086

that it can not accurately display personal information, so as to achieve privacy protection and promote the sustainable development of educational informatization [19].

5.2. Analysis of Research Context Based on Keywords

The research of digital education can be divided into three stages: exploration stage (2010-2011), improvement stage (2012-2016) and deepening stage (2017-present). With the introduction of the outline of National medium-and long-term Education Reform and Development Plan (2010-2020) and the Ten-year Development Plan of Educational Informatization (2011-2020), digital learning, educational informatization and digital education have been paid more and more attention and are closely related to the development of the country. Then a large number of keywords and research hotspots in digital education began to turn to specific content, including cloud computing, learning environment, university library, electronic textbooks, big data, digital reading, flipping classroom, digital publishing, MOOC, digital literacy, online learning and so on. With the landing of one education policy after another, the research content of digital education is becoming more and more abundant, and the path, resources and guarantee of digital education have become an important entry point. Since 2017, digital education research has entered the sedimentation period, the heat of theoretical research has gradually decreased, and the research results have been reduced compared with the previous stage. Digital education promotes the development of digital economy, narrows the digital divide, and ensures information security in a more prominent position.

5.3. Research Frontier Exploration Based on Keyword Salience

This study determines the frontier of digital education research through the frequency growth mutation rate of keywords, subject words, titles, abstracts and other parts of digital education research literature. The high emergent value of key words indicates that many scholars pay attention to it in the corresponding time period, which represents the frontier position in the field in a certain sense. The research frontier in 2015 is teachers, vocational education, MOOC and library, and the front line of MOOC lasts until 2020. In 2016, the research frontiers were big data, the digital divide, education and learning analysis, while big data and the digital divide lasted until 2020. The research frontier in 2017 is digital teaching materials, digital literacy, digital age, artificial intelligence, digital teaching materials, digital literacy and artificial intelligence research frontier until 2020. Keywords that last until 2020 are likely to be the main concerns of digital education research in the future.

6. Research Conclusions and Prospects

Since the introduction of policies related to digital education in 2010, the academic community has responded rapidly to it. The number of literature on digital education has increased rapidly, especially the number of research literature and innovation points in 2013 has exploded. Although the growth rate of research literature in 2014-2019 has decreased slightly, it is affected by the epidemic situation of COVID-19 in 2020, the scale of online education and online learning is unprecedented, and the number of research literature is still stable. It is predicted that the number of research sites will be richer and the number of research literature will rise in 2021. Through the analysis of the author's cooperative network map, it is found that most of the well-known scholars as the center spread out, and the team cooperation is becoming more and more close. The analysis of the institutional cooperation network map can be concluded that the overall college of education, the department of information education as the main body of research, the source institutions are also relatively consistent, reflecting the long-term and professional nature of the research.

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202204_5(4).0086

Through the cluster analysis of keywords, the results show that the research hotspots mainly involve eight categories: digitization, digital learning, electronic schoolbag, teaching mode, information technology, learning analysis, public library and online learning. The research hotspots involve digital learning, educational informatization, digital transformation, educational publishing, digital campus and other fields. Promoting the development of digital economy is the key words of future research hotspots. MOOC, big data, digital literacy, digital divide, digital teaching materials, artificial intelligence are the cutting-edge themes of future research.

To sum up, the academic research in the field of digital education has entered a more and more in-depth stage, the research ideas are becoming clearer and clearer, and the research results are of more and more typical significance, which not only has a great contribution to the current education in our country, but also injects power into the road of modernization of the country.

References

[1] Yang Yin pays. Educational changes and Policy response brought about by Internet + Education [J]. Educational Research, 2016, 37 (06): 4-8.

[2] Cheng changed his brother. An Analysis of the path of Educational Reform in the Digital Age [J]. Educational Theory and practice, 2016, 36 (22): 24-27.

[3] Tang Hanwei. How education will exist in the era of artificial intelligence [J]. Educational Research, 2018, 39 (11): 18-24.

[4] Wang Su. Artificial intelligence and two-way empowerment of education [N]. China Education Daily, 2019-06-29 (3).

[5] Yu Shengquan. The future role of artificial intelligence teachers [J]. Open Education Research, 2018, 24 (01): 16-28.

[6] Li Zhengtao. The Age of artificial Intelligence: the change and invariance of Education [N]. CPPCC News, 2017-11-01.

[7] Chen Lin. Research on the Construction of three-dimensional Learning Resources in Colleges and Universities: a Perspective of promoting the Transformation of Learning style [J]. China Audio-visual Education, 2013 (11): 95-97.

[8] Luan Xuedong. Three trends in the development of in-service teacher education teaching materials under the background of digitization [J]. Teacher Education Research, 2014, 26 (06): 27-30.

[9] Lan Guoshuai, Guo Qian, Wei Jiachai et al. (2019b). 5G + Intelligent Technology: building a New ecosystem of Intelligent Education in the era of "Intelligent +" [J]. Journal of distance Education, 37 (3): 3-16

[10] Williamson,B. (2018) . The hidden architecture of higher ed- ucation: Building a big data infrastructure for the "smarter university" [J]. International Journal of Educational Technology in Higher Educa- tion,15 (1): 12

[11] Dennis,M.J. (2018). Artificial intelligence and higher edu- cation [J]. Enrollment Management Report,22 (8): 1-3

[12] Wang Zhuli (2020). In the post-epidemic era, how should education be transformed? [J]. Audio-visual Education Research, 41 (4): 13-20

[13] Yu Shengquan, Wang Huimin (2020). How to better organize online learning in extreme environments such as epidemic situation [J]. China Audio-visual Education, (5): 6-14 + 33

[14] Zulfikar,M. w. , Bin Hashim,A. .I. , Umri,H. u. B. A, , et al. (2018). A business case for digital transformation of a Malaysian-Based University [A]. Paper presented at the 2018 International

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202204_5(4).0086

Conference on Information and Communication Technology for the Muslim World (ICT4M) [C], 106-109

[15] Liu Ping, Zhang Rui, Zhao Wenguang (2020). Design and research of data sharing center in colleges and universities [J]. Modern Information Technology, 4 (1): 104-106

[16] Yan Xiaomei, Wan Qingqing, Gao Bojun and others (2020). The New trend of EU Scientific Literacy cultivation from the Perspective of Digital Transformation interpretation and Enlightenment of the report "Science and Scientific Literacy as an Educational Challenge" [J]. Open Education Research, 26 (4): 37-44

[17] Ren Youqun, Lu Beirong (2015). The top-level design of educational informatization depends on the year of planning [J]. Audio-visual Education Research, 36 (6): 5-8 + 14

[18] Wu Di, Rao Jingyang, Wei Xiaorong et al. (2014). Comments on Ten issues of higher Education Informatization in the United States from 2000 to 2014 [J]. Audio-visual Education Research, 35 (11): 109-117 + 120

[19] Lan Guoshuai, Zhang Yi, Guo Qian, Kong Xueke, Wei Jiachai. Promoting the Digital Transformation of higher Education: optimization, persistence and Innovation: interpretation and Enlightenment of the report of the Ten IT issues in 2020 [J]. Open Education Research, 2020, 26 (05): 12-25.