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Based on CiteSpace Artificial Intelligence Application in the Teaching Evaluation were Reviewed

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Abstract: Artificial intelligence is widely used in many fields, including education. Artificial intelligence is an important application field in educational guidance, management, evaluation, etc. Through the systematic review and analysis of artificial intelligence theory, it is applied to the study and life evaluation of college students. Therefore, in the past 5 years (2015-2022), this paper has published literature collection database of Science Network (WOS) and searched relevant literature published on CNKI. Found a total of 2336 papers, with the aid of CiteSpace clustering analysis function, keywords co-occurrence and time zone map system analysis. Can be seen from the analysis in the study, in most studies, artificial intelligence application in the education behavior behind the pedagogy less well, at the same time, discovered the formative assessment AI seems to be the evaluation mainly USES. Artificial intelligence (ai) in the evaluation of teaching is a main function of student to carry on the automatic grading. Using CiteSpace countries, institutions, and artificial intelligence research topic is analyzed, in order to get the research field of artificial intelligence and hot spots, the application of artificial intelligence in education evaluation, in turn, provide reference for subsequent research.

Keywords: Artificial Intelligence; Education Evaluation; Education; Student Feedback.

1. Introduction

AI is one of the most related applications in the area of education. Not only do we mean face-to-face and smart learning environments, but especially e-learning, we implement adaptive learning, Language justice, machine learning, ontology, natural language processing, and deep learning. The origin of automatic learning can be traced back to B.F. Skinner's teaching machine and its application, but since then, we have seen a great improvement. In 2019, many experts in the field of artificial intelligence (ai) participated in the meeting in Beijing, they reached an agreement on "AI with education in Beijing". In the paper, they stressed the importance of AI in education, as the establishment of UNESCO Sustainable Development Target The main activities are: Cross-Educational Policy; Promote its application in educational administration; Empower teachers and students; Promote Life, Work and Skills [1]. Opportunities for lifelong learning to overcome the digital world. Encourage the application of equity and inclusion, including equality between men and women; use of ethics and transparency; research, assessment and promotion of innovation. There are some interesting real experiences around AI. Horizon report put together some of them. For example, IBM's Watson Tutor, which is already in Texas, teachers and students, or Canvas in LMS [2]. Another lesson from the University of California at San Diego is DSMaccess to resources and students' projects using machine learning. The third example is Boost APP, which integrates the Canvas LMS for online learning. Three aspects are analyzed in another related report: with artificial intelligence (the use of such instruments in education), to know (how to use these tools) and AI to prepare for the (potential) AI to know that they will change our lives. In terms of their application in education, there are various experiences, but generally all of them have closed with guidance, guidance or assessment.

2. Study Design

2.1. Research Purpose

Our research question is: AI in the main purpose of education is what? Around this problem, we can put forward the research question: is there a teaching evaluation research based on AI application? The main research come from? In the surrounding of artificial intelligence research, more tend to develop education methods or techniques related to?

2.2. The Analysis Tools

CiteSpace is a visualized analysis software, it can show visual field or discipline information view, macro structure and the development trend of a certain period and trend, and can detect and find field research hot spot and front [3]. In this paper, with the aid of CiteSpace 5.3 software provides national and institutional cooperation network analysis and clustering analysis, key word co-occurrence time zone map, and other functions, analyses the application of artificial intelligence in education research hot spot and front along the analysis, and artificial intelligence application in the evaluation of education and explores its development context.

2.3. The Data Source

All data of this paper is derived from the Web of Science (WOS) core collection and CNKI of artificial intelligence literature, and the search in artificial intelligence applications in education evaluation related articles, literature type does not limit, the time range is set to 2018-2022, CNKI choose academic journals, and check the SCI, EI, Peking University core, CSSCI, CSCD source journals, which received the 1097 documentary on CNKI, secondary screening after the remaining 766 paper, we use the CiteSpace data duplication function get 762 articles. Appeared in the Web of the core collection of Science 1608 documentary records, due to the language ability is limited, and no secondary screening, just

use CiteSpace data duplication function after 1604 articles. A total of 2336 articles were as the research data.

2.4. Data Search Criteria

Web of Sciences all articles are accessible to the public and must not be censored. To make sure that the search process is sensitive, we carried out word co-occurrence analysis to identify the most frequently used words and research questions[4]. Based on the analysis, we find that the most commonly used search terms are "AI", "Machine Learning", "Education", "Evaluation" and "Evaluation". Artificial Intelligence and Machine Learning. "Evaluation" "evaluation" for more concrete terms, design an agreement, the agreement is a combination of these terms and Boolean operators [5]. The combination of these two databases is: Web of Science: (AB = AI and Machine Learning); AB = Training and AB = (Evaluation or Evaluation)). Cycle time: 2018-2022. Language: English. CNKI selects a class of academic journals, uses advanced screening, keywords for "AI and AI," and "Education" and "Evaluation or Evaluation", SCI, EI, Peking University, CSSCI and CSCD source journals, that is to say, CNKI in 1097 documents, second screening after 766 papers.

3. Artificial Intelligence Application in the Teaching Evaluation Study Concept

3.1. The Education Evaluation of Artificial Intelligence

Adaptability education mode solutions, support and education measures. These authors including some examples, such as chatbots, used for real-time interaction with users and provide personalized information. Taking into account all of these theoretical frameworks, this study will focus on how to apply artificial intelligence to the teaching evaluation of practical level[6]. Although mentions the use of artificial intelligence tools, but the study aims to show the results of the study on the level of education, so that any wish to implement artificial intelligence evaluation education participants can improve teaching quality on the basis of previous research.

3.2. The Other Education Purpose of Artificial Intelligence

The solution, support and educational measures of adaptation education model. These authors including some examples, such as chatbots, used for real-time interaction with users and provide personalized information. Considering all the above theories, this paper will focus on how to apply AI in practice teaching assessment. Even though there are references to the use of AI tools, the purpose of this research is to demonstrate the results of this research on educational levels, Therefore, any desire to implement AI assessment education participants can improve the quality of teaching based on previous studies.

3.3. Understanding of Education Artificial Intelligence

Through the analysis of various research, can clearly see that artificial intelligence is a kind of can application in different ways and different levels of tool. Therefore, it is important to note that only two studies at the beginning of the thesis described their Chen is what viewpoint of artificial intelligence. Therefore, Sun and others work suggests that "artificial intelligence (AI) is the combination of intelligence, which can show human intelligence and using human skills to make a decision machine", as a result, people work smart aims to "build to make smart decisions highly advanced machines". Deo et can determine the artificial intelligence can be used as an independent subcategory of the implementation of intelligent algorithm in the model, or in a hybrid integrated computer system model. Both studies agree to such a point of view, that is, they are proved to make similar to human will do decisions effective system. Research on the artificial intelligence technology is used in a variety of, despite the fact that the most widely used fuzzy logic system, often used in combination with other methods[7]. Can to see, on the analysis of the different research is still relatively insufficient teaching about the application of artificial intelligence. Only one study it then clearly dealt with and support the development of teaching model about aspects of the work. More recent work focuses on the junction and the technology of artificial intelligence, rather than support for its use in education teaching mode.

3.4. Used as AI Reason of Formative Assessment

Now many AI techniques are based on AI formative assessment. Some of them explicitly refer to this kind of assessment, while others may be derived from the work they describe. Three of the paper without using formative assessment, the thesis focuses on the application of AI in English teaching, and the other two in secondary education is the application of AI in two other mathematics. But at the college level four studies, which are formative evaluations. Social intelligence is a very strong source, allows for frequent feedback to students, automatically if there are too many students, it can help them complete the task. Michael and other people found that artificial intelligence and the use of formative assessment can guide learners' ability to obtain, For E - Learning the individualized learning, in combination with AI, in their case by computer adaptive testing methods[8].

4. Artificial Intelligence Application in the Teaching Evaluation Research Literature Analysis

4.1. The Artificial Intelligence Research

Use the inside of the web of science 1604 articles, using Citespace making a study of artificial intelligence in the field of education national distribution map, as shown in figure a, in the pictures that show from the post of the size of section point, you can see the number in the field of artificial intelligence education is one of the most, followed by China, so China's research and study can serve as a representative of the literature in the field of artificial intelligence education in countries with high yield and the UK, Australia, Japan, Germany, Canada, India, South Korea, Spain, etc. Those countries[9]. Can see from this figure, education field of artificial intelligence in the development of every country widely, the most important thing is that every country in Europe and Asia. Number of how many shows the country to the attention of artificial intelligence to compare if the number is more, explain attention is deep, will get the corresponding results, at the same time, it shows that these countries in the field of artificial intelligence education industry in a leading

position in the world. But from several countries in the field of artificial intelligence education attachment above, you can see that China and the United States, Britain and other countries less attachment more fine, also can to show that the exchange and cooperation between them is less, but the research is to choose CNKI as more published, so the forecast in the field of education and research of artificial intelligence can predict more on CNKI[10].

Figure 1. Schematic diagram of the main study countries

4.2. The Main Research Institutions

Tianjin university) and Stanford Univ (Stanford university), from big to small, to a certain extent, can be to indicate a problem, it is the four institutions of artificial intelligence research is more and more thorough. Which is China's top science, Chinese Academy of Sciences, the highest academic institutions and technology consultancy, the well-known, MIT and Stanford university are famous, such as the United States at the university of course at the university of Oxford, is when the deserves the world flow, also have higher academic status, influence and thus can see related research in the field of artificial intelligence in education are mainly concentrated in top international journals of all countries and institutions, including the most is in the corridors of power of universities and research institutes from the perspective of the attachment of institutions, most of the institutions are touch each other, and no independent research, are compared each other closely, but China's research institutions and the connection to the other countries is less, also relatively thin, so the lack of mutual cooperation and exchanges in[11].

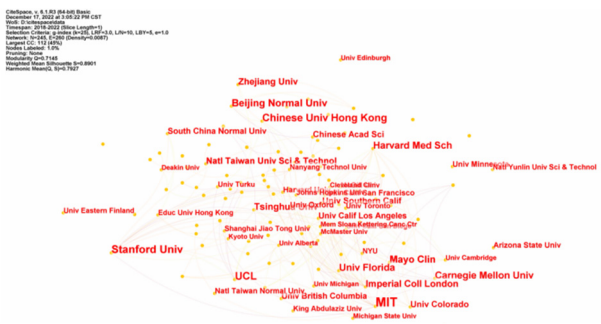

Figure 2. Main study Institution Figr

5. Artificial Intelligence Application in the Teaching Evaluation Research Hotspots and Potential Issues

5.1. Hot Research Field

Thus, it can be seen that most of the use of artificial intelligence in education tend to technology, used in the field of practical teaching in the real education is less.

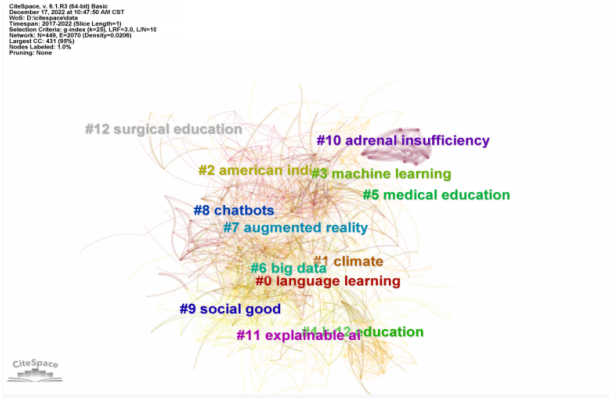

Figure 3. Atlas of international research hotspot analysis

5.2. The Application of Artificial Intelligence in Education Evaluation

How the AI system for student assessment and grading, because it is similar to the teacher evaluation, despite these steps, and artificial intelligence in the field of education can do, thinking, programming, calculation skills, is the last message and audio-visual skills[12]. Computational thinking, therefore, from the early childhood education is one of the main skills began to cultivate, in order to make students as a programming, robotics and artificial intelligence will be to develop their ability to prepare essential world. In children's early education for the development of computational thinking and experience is necessary. Teachers make use of this technology is also very important, not only based on the learning tools, but also based on the reference model of teaching, the significance of the development of these models to class[13]. If we want to use artificial intelligence technology to enhance learning and intelligent environment, teachers are the critical success factors. Of course, our study found that a lot of artificial intelligence application in the past few years, there are a few articles focus on the student evaluation. But also, can clearly see from the picture, in the education of the great research of artificial intelligence in the knowledge map has the emergence of evaluation, for example in the teaching evaluation, emerge in intelligent teaching in the field of online education quality evaluation, the learning evaluation in the field of big data, evaluation in the education of the students in the future. Research is at the forefront of education evaluation stage, can learn from each other, and learn from each other more development[14].

5.3. To Predict Potential Issues

Work smart server and the application of intelligent terminal. Artificial intelligence has a huge potential in realize effective learning and teaching. They inspire new research questions and design in data collection and analysis of the use of innovative technologies and tools, and eventually become the mainstream paradigm (Daniel, 2019). However, for many researchers and teaching education workers, they are still quite new and strange. In this article, we describe the general background in the field of rapid development, the core concept and the latest progress. With the emergence of opportunities, we emphasized the key challenge in the field of artificial intelligence in education and emerging trends, these challenges and emerging trends reflected in education, research, policy and industry. All in all, the future research should be based on the theory of precision education as the goal, in combination with interdisciplinary applications, and appropriate use of education technology[15]. The government

should focus on support lifelong learning, provides the teacher education program and protection of personal data. In terms of education, should develop mutually beneficial relationship, strengthen the industry-university-institute cooperation. In education, research, policy and industry use of artificial intelligence (AI) faces new challenges and direction. In recent years, artificial intelligence has made rapid progress in the application in the field of education, education research at the forefront of this highlights the new trend, the convenience of data collection and embedded in education technology, combined with computing technology, make the big data analytics become a reality. We are beyond the proof-of-concept demonstration and technical applications, and start to see a large number of USES in many fields of education[16]. The main research trend in the field of artificial intelligence related to evaluation and precisely personalized learning and education. Model driven method of data analysis will be rapid development, to guide the development of algorithm, explains and validated.

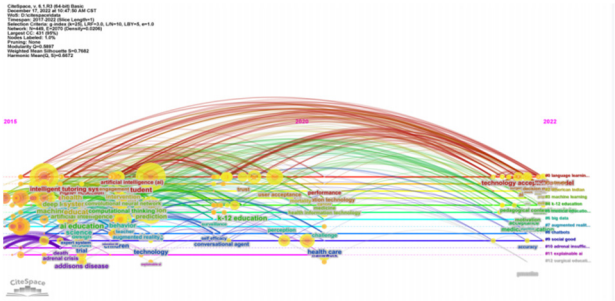

Figure 4. AI future trend chart

6. The Conclusion and Discussion

One of the tools. As mentioned earlier, artificial intelligence applied to the main purpose of the education and guidance, management and evaluation, we based on the current two main database: a Web of Sciences and articles published in CNKI, heavy point analysis of the artificial intelligence application in student assessment. Can be concluded that we can come to the conclusion that in the last five years have 2336 articles about the AI and the education work, we found that every research field of artificial intelligence in education or design to evaluate how much more, but the use of the depth of the shallow[17]. Although made great achievements in recent years, artificial intelligence technology progress, but from the analysis can be clearly seen in the research, there is usually no conceived in study teaching mode. The authors described their work in more focus on the analysis of resource itself, to explain algorithm and use of the platform, but there is no emphasis on certain activities behind the teaching base. Few studies have made clear the AI will evaluate the activities behind the choice of teaching should be how to use it[18][16]. Have also made some research suggests that the teaching principle, which is mainly based on cooperation, and this, in fact, all of the author to participate in related to STEM or health science degree is closely related to the fact, education is not considered in these disciplines. Is the method of artificial intelligence technology, the education method is most of the articles of the secondary element. In general, the possibility of artificial intelligence provides a great education, especially in counseling, evaluation and a sexual education, and most of these are still to be found[19]. We must promote the work between the education and AI experts, because if we don't understand education context, don't understand education interactive features, don't know the real user needs, we will not be able to understand technical education potential[20]. If we want to know about the future of education in advanced technology, technology and education must go together, in order to understand the next few years, the upcoming new education.

References

[1] chang-e liu, bin-bin cheng, the original source, qin. International artificial intelligence research and cutting-edge technology based on CiteSpace analysis [J]. Journal of book intelligence Tribune, 2020, 5 (8): 53-58.

[2] rong-huai huang, Tian Yang. Development of the whole development of education should focus on education of ecological wisdom [J]. Journal of educator, 2020 (02): 20-21.

[3] Chang-e liu, bin-bin cheng, the original source, qin. International artificial intelligence research and cutting-edge technology based on CiteSpace analysis [J]. Journal of book intelligence Tribune, 2020, 5 (8): 53-58.

[4] Fang Xu, open Wen Hui. Artificial intelligence support to rural education revitalization of the difficulties and countermeasures [J/OL]. Read Jiang Xue:1-9[2022-12-17].DOI: 10. 13878/ j. cnki. yjxk.20221205.001.

[5] Qiu Yi nan, glockenspiel. Application progress in the field of digital teaching in nursing education [J]. Journal of modern health, 2022, 22 (24): 2101-2104.

[6] Credit orienwise. Focus on students' literacy construction of intellectual education, elementary school on the teaching practice of artificial intelligence [J]. Journal of teacher online, 2022 (31): 7-9.

[7] Liu Mengjun, xin-yu jiang, Shi Sijin, jiangnan, Wu Di. Warnings: artificial intelligence education fusion from the function of machine learning algorithms of native risk analysis [J]. Journal of jiangnan university (humanities and social science edition), 2022, 21 (5): 89-101.

[8] Shu-hui jiang, shi-yin jiang, zhang jie. Education development of artificial intelligence can assign education and reshape the technology application study [J]. High research in heilongjiang province, 2022, 40 (11): 18 to 24, DOI: 10.19903 / j. carol carroll nki cn23-1074 / g. 2022.11.007.

[9] She. International organizations view of education application of artificial intelligence: technology, practices and challenges [J]. Journal of comparative education research, 2022, 44 (10) : 86-93 + 102. DOI: 10.20013 / j. carol carroll nki operator 2022. 10. 10.

[10] Zhao Ling princess, marc oursin. Big data under the artificial intelligence technology in the higher vocational education quality evaluation in the practice application [J]. Journal of economist, 2022 (9): 211-212.

[11] Gao Qi march. China's special mission in artificial intelligence era [J]. Journal of exploration and schools of thought contend, 2017 (10) : 49-55.

[12] Sun jiamei. Analyses the development and application of artificial intelligence and thinking [J]. Journal of the science and technology, 2018 (35): 89.

[13] Wu Chaonan Li Qiuying. The core technology of artificial intelligence industry international competition analysis [J]. Journal of China institute of electronics, 2020, 15 (11): 1128-1138.

[14] Housekeeper, PuSong Yang. Artificial intelligence under the wave of the third world development dilemma and countermeasures [J]. Journal of xiangtan university

(philosophy and social sciences edition), 2021, (03): 160-168180.

[15] Yang Shuming. A new era of governing modern intelligent social background [J]. Journal of jianghan BBS, 2018 (3) : 11-23.

[16] UNESCO. Elaboration of a Recommendation on the Ethics of Artificial Intelligence. Available online: https://en. unesco. org/ artificial-intelligence/ethics (accessed on 22 May 2021).

[17] United Nations Transforming Our World: The 2030 Agenda for Sustainable Development/Department of Economic and Social Affairs. Available online: https://sdgs. un.org/ 2030 agenda (accessed on 22 May 2021).

[18] Cope, B.; Kalantzis, M.; Searsmith, D. Artificial intelligence for education: Knowledge and its assessment in AI-enabled learning ecologies. Educ. Philos. Theory 2020, 1–17. [Cross Ref].

[19] Prendes Espinosa, M.P.; Cerdán Cartagena, F. Tecnologías avanzadas para afrontarel retodela innovación educativa. RIED. Rev. Iberoam. Educ. Distancia 2020, 24, 35. [CrossRef].

[20] Mirchi, N.; Bissonnette, V.; Yilmaz, R.; Ledwos, N.; Winkler-Schwartz, A.; Del Maestro, R.F. The Virtual Operative Assistant: An explainable artificial intelligence tool for simulation-based training in surgery and medicine. PLoS ONE 2020, 15, e0229596. [CrossRef].