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The Impacts of Information Technology Integration in Education on Educational Equity

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Abstract: The degree of informatization is increasing in tandem with the world's advancement of science and technology, and it affects all aspects of people's lives, including the integration of education. The integration of information technology and education has spawned many new teaching models, and it becomes the mainstream trend, especially under the influence of the global COVID-19 epidemic. This paper primarily investigates the teaching mode with the information technology integration in education, and what impacts it will bring to the realization of education equity in order to seek better teaching methods and educational models to achieve educational equity. This paper primarily employs the methods of literature review and comparative analysis to demonstrate that integration has a positive impact on educational equity, while at the same time, there will be new education inequity, which undoubtedly brings new challenges to our education.

Keywords: educational equity, integration, information technology

1. Introduction

With the advancement of information technology and computer science in recent years, an increasing number of academics and researchers have incorporated it into educational practice with positive outcomes that also have a corresponding impact on educational equity. On the one hand, this integration goes a further step to promote the implementation of education equity. On the other hand, the integration will produce new education inequity simultaneously. This paper adopts the literature research method and comparative method, conducts horizontal and vertical comparison, and concludes the impacts of the integration on educational equity through reading and summarizing a large number of literature. The objective of this essay is to explore the impacts of the integration of information technology and education on education equity through studying the definition of education equity, the advantages and disadvantages of combining information technology with education, and what measures should be taken by educators and researchers in the future to minimize education inequality and narrow the gaps between different students. Also, how better educational equity should be realized under the background of information integration and informatization.

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2. Educational Equity Theory

2.1. The Definition of Equity

The theory of educational equity has always been a heated issue for researchers, which is considered to be an important way to achieve social equity. In the *Oxford Advanced Learner's Dictionary*, equal means having the same rights or being treated the same as other people, without differences such as race, dependence or sex being considered. The definition of equity is being equal in rights, status, advantages, etc[1]. In western society, people generally agree with the ancient equality ideology of Plato and Aristotle, Hobbes, Locke, Rousseau and Kant's modern equality ideology, Rawls, Dworkin, Adler's contemporary equity theory and contemporary justice ideology of Rawls, Liko, Sandel. Most of these researchers are analyzing and studying the realistic problems of educational equity to seek solutions to realize the ideal education in an ideal society[2-4]. Therefore, educational equity theory is a historical and relative concept. Because scholars have different understandings of education and research fields, there are different understandings of the connotation and extension of educational equity.

2.2. The Development of Educational Equity Theory

In 1918, C*ardinal Principles of Secondary Education* has been published in the United States, in which schools can provide an appropriate curriculum to students with different backgrounds to suit their career goals and interests. It shows that equity of educational opportunities are emphasized in the United States at that time. In terms of education policy, the government increased the national education funds and expanded the opportunities for young people to receive education to pursue equality in educational results. In 1960, UNESCO has stated the concept of equity of educational opportunities, which includes the elimination of discrimination and inequality. In 1966, Coleman introduced four stages of the evolution of equal educational opportunity in *Equal Educational Opportunity*, including equal access, different courses to meet diverse needs, the abolition of racial segregation, and equal education output. However, the phenomenon of inequality still exists. In the 1990s, the U.S. government implemented measures to improve the academic performance of the youth and promote social equity. In 2002, *No Child Left Behind* was introduced to ensure that every child has equal access to education. Also, *The American Educational Technology Program 2010* pointed out that the core is the use of information technology to advance and expand educational effectiveness and equity[2-4].

2.3. The Classification of Educational Equity

At present, the popular statement is that there are three types in educational equity[5]. The first is starting point equity, which means that the starting point of equity is equal opportunity, and everyone is supposed to have equal access to education. The second is process equity, which refers to paying attention to students' differences in the educational process and respecting their personalities and different needs. The equality of difference now serves as the benchmark for equity rather than only the equality of the same. The third component of educational equity is result equity, which is both its core and ultimate purpose. The main goals are to guarantee high academic standards and encourage students' overall and personal growth.

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3. The Integration of Information Technology and Education

3.1. The Definition of Integration of Information Technology and Education

A key idea to support education informatization is the merging of information technology with education. Education informatization is a compound intersectional area of education and information technology. There are two meanings of education informatization, the first is to integrate information literacy development into educational objectives and foster the development of talents that can adapt to the information society. The second is to effectively integrate information technology into teaching and educational research while paying attention to the creation and use of educational information resources[4]. The combination of information technology and education in this essay primarily emphasizes the second sense. Integration is a process of approaching and complementing each other's advantages, seeking connections, generating substantive and meaningful links, and finally becoming an integral whole.

3.2. The Benefits of Information Technology Integration in Education

The progress of education and teaching is greatly aided by the combination of information technology and education, which makes full use of contemporary science and technology and continuously refreshes traditional teaching methods. The following features illustrate its benefits: In the beginning, it can increase the efficiency of instruction and pique students' interests in their studies. Informatization strengthens the authenticity of teaching materials, turns difficult into easy and deepens students' understanding from perceptual to rational, making students learn desirably and forming learning motivation. Students can choose the learning content they want to learn and the exercises which are suitable for their own level, and that truly makes students become the subject of learning. Secondly, students are able to extend their knowledge vision and enhance their practical ability. The integration of modern technology and education has increased the knowledge capacity in the classroom, enriched the teaching content, widened the feedback ways of teaching effectiveness, and opened up a wider area for teaching and learning knowledge effectively. Additionally, the teaching quality has been improved because of incorporating information technology into education, which may overcome the constraints of teaching time and space, support students in developing their capacity for information acquisition, and energize the classroom environment. The use of information technology helps teachers to better articulate their lessons, which indirectly raises the caliber of instruction.

3.3. The Disadvantages of Information Technology Integration in Education

Although there are numerous benefits to integrating information technology and education, we should also be aware that there are still some flaws in the process of integration, particularly in the following areas: To start with, the use of information technology in education goes beyond simple classroom applications, but about creating a digital learning environment, active learning scenarios, and conditions for students to maximize access to information technology. The main goal of the integration of information technology and education is to improve learning and maximize the expected learning effect. Secondly, the main body of the integration of information technology and education is the classroom, not information technology itself. The most fundamental starting point should be the curriculum goal which improves learners' learning and make sure the appropriate technology is selected. Many educators often use information technology in the process of integration only for using information technology, which puts the cart before the horse. Thirdly, information technology is mainly used as a demonstration tool in the current teaching, and

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sometimes it is just a superficial decoration, so it needs to be improved to make use of information technology as a tool and resource for students' exploration and research learning[6].

4. The Impacts of Information Technology Integration in Education on Educational Equity

4.1. Positive Impacts

One of the functions of information technology is to break the geographical restrictions between educators and students, and promote the allocation of educational resources without geographical limits. Additionally, it makes it possible for top-notch educational and teaching resources to be shared, giving every student the chance to benefit from high-quality educational resources and enhancing the equity of the educational process. With the implementation of various online education, numerous students have been provided with learning opportunities, thus contributing to the equity of educational results to some extent. Distance education can alleviate the contradiction among the equality of starting point, process and result to a certain degree. It is possible to achieve relative equity of the education process and result as long as the basic conditions are reached. The teaching style has shifted from "teaching oriented" to "learning oriented" as a result of the integration of information technology and education, which represents the shift in instructors' duties in the classroom. Education equity promotes and respects the pursuit of individuals' right of choice and gives individuals the opportunity to choose the education they need and suit. Currently, our classroom teaching mode makes it difficult to achieve personalized teaching, however, the integration of education and information technology can achieve this goal. Not only can it enable learners to choose the content they need through massive educational information resources according to their own interests, but also build a platform between students and teachers for interactive communication with the aid of information technology, to accomplish individualized instruction and learning. In addition, elevating the standard and caliber of teachers is possible through the integration of information technology and education. Science and technology can be used to create and disseminate high-quality educational resources, break down time and geographic barriers for teacher preparation at all levels and across regions, and enhance the standard and effectiveness of teacher preparation. Besides, the integration can provide space and opportunity for teachers with different teaching experiences, teaching and learning styles to develop their potential. For instance, instructors in rural or suburban regions can significantly lessen their financial load, allowing them to provide all of their students with the opportunity to learn. As a result, the teachers' professional knowledge and abilities are enhanced, which also advances educational equity[7-9].

4.2. Negative Impacts

Information technology is a double-edged sword itself, and its application may aggravate social inequities. It is possible to aggravate the inequities of education further due to the differences in informatization concepts and abilities. For instance, instructors' poor understanding of education technology results in the underuse of various educational tools during the teaching and learning process, and the weak basic computer skills of the students cause obstacles to the effective application of information-based educational resources and even lose the opportunities to receive education, which causes or even aggravates the phenomenon of education inequity to a certain extent.

The integration of information technology and education will also cause new inequity in education. First of all, information technology in education has been widely used in developed and affluent areas, but schools in rural and remote areas lack excellent talents to design and develop educational resources, and even cannot obtain educational resources developed by other schools due to resource sharing restrictions. The construction of information facilities in remote areas is lagging

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behind and imperfect, the information communication is not developed, the lack of learning exchange platform can not obtain real-time education and teaching information, and the absence of dialogue between educators and students leads to one single learning mode and relatively low learning efficiency. This phenomenon will lead to new educational inequities in developed and underdeveloped areas. Secondly, under the background of education informatization, teachers are not the main body of education anymore, but play a leading role in education and teaching. There are always excellent teachers with rich qualifications in developed areas, who have advanced educational concepts and teaching methods. Although these concepts and modes can be spread to less developed areas through distant learning in different places, students struggle to acquire more actual learning experiences because they lack access to authentic learning environments. Third, the integration of information technology and education can promote the sharing of high-quality educational resources, which often show regional characteristics and are suitable for local learners, but not suitable for learners in other regions. However, in some regions, especially undeveloped ones, it is impossible to develop learning resources that meet the local characteristics and cultural backgrounds, and the problems of educational inequity have not been solved[7-9].

5. Suggestions for Better Ensuring Education Equity

The following recommendations and actions are suggested in order to better assure education equity when implementing the integration of information technology and education in light of the detrimental effects of such integration on educational equity that were previously discussed. Firstly, it is suggested to increase investment, build software and hardware facilities for education informatization in underdeveloped areas, and optimize resource allocation. Secondly, introducing talents can be done to develop personalized learning resources which are consistent with their regional characteristics and cultural backgrounds for underdeveloped areas. Thirdly, carrying out educational training regularly is claimed for teachers in underdeveloped areas, which promotes exchanges and interactions between developed and underdeveloped areas, providing one-to-one assistance[2].

6. Challenges in the Future

The imbalanced development of educational resource allocation is a challenge to the realization of educational equity[5]. If the development in different regions is imbalanced, the resources allocated to them will also be imbalanced. The quality of teachers is also unevenly distributed. Whether the arrangement of teaching plans in the school provides the same opportunities for all students, or whether the actual distribution of these plans in the public center network is balanced and equal, etc. In addition, in order to better integrate information technology and education, teachers also face certain challenges in the use of information technology and its operation. Because it is not guaranteed that all teachers can skillfully use information technology in the classroom, and there is no specific teacher training. However, from the author's own perspective, when people find the problems and challenges in the combination of information technology and education, how to find solutions to meet these challenges is the biggest challenge in our future.

7. Conclusion

This paper focuses on the effects of information technology integration in the classroom on educational equity in the context of informatization. The impacts come in two forms. The use of information technology can increase equity in education, including breaking geographical restrictions making more students have equal access to education, and so on. But the negative impact is that there will be some new educational inequities, such as whether this new educational

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model is really suitable for all students, especially underprivileged students. Due to the limited time, this paper's literature is insufficient enough, and some places may not be comprehensive enough. It is hoped that the problems can be improved in future research, which may focus on specific measures to improve new educational inequities in the context of the integration of information technology and education.

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