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NEWSLETTER

Some Thoughts on the Evaluation of Smart Education

Mr. ZHANG Yongkai, Deputy Director of Beijing Municipal Education Commission

First, smart education means profound revolution in the ideas, modes, systems of education. It will break the time and space limits of traditional education, transcend the resource barriers, connect schools and regions that are isolated under traditional education modes, and profoundly transform the current education mode, greatly enhance the development of education, gradually form a scenario that is more open and more flexible for everyone and suits everyone.

Second, in order to guarantee the strength of implementation, the effectiveness and direction of smart education, the evaluation of smart education should be conducted when we study the development of smart education, as evaluation can lead the fast and healthy development of smart education. As regards evaluation, five principles were proposed, i.e., sticking to the central position of talent-cultivation, sticking to the equity principle, sticking to the to the individualization principle and sticking to the experiential principle.

Third, the smart education of China is stepping from initial application towards overall fusion and innovation. The leading role of smart education evaluation should be brought into full play. A high-quality education system should be established featuring network, ubiquity, individualization and lifelong learning. Efforts should also be put into concrete implementation, i.e., innovating the overall education ideas, promoting the transformation of talent cultivation mode, proceeding with the reforms in education evaluation, establishing the smart governance mode by law, and perfecting the lifelong learning system.

Zhang Yongkai also introduced the smart education practice in Beijing and described the prospect of smart education development in the future.

How IEA Studies Can Contribute to Expanding Our Understanding of Young People's Digital Competencies

Dr. Dirk HASTEDT, Executive Director of IEA

ICILS(International Computer and Information Literacy Study Programme), began in 2013, is conducted every five years, with a third measurement underway in 2023. ICILS includes two measurement dimensions, CIL (computer information literacy) and CT (computational thinking), which measure students' level of competence by creating problem situations. Measuring students' digital skills is important, and the rich, internationally comparable data from this large-scale assessment provides countries with support for decision-making. ICILS has been recognized by EU member states for measuring digital skills in Europe. ICILS found that 18% of students did not have the minimum digital skills needed to communicate, access and produce information in their current lives.

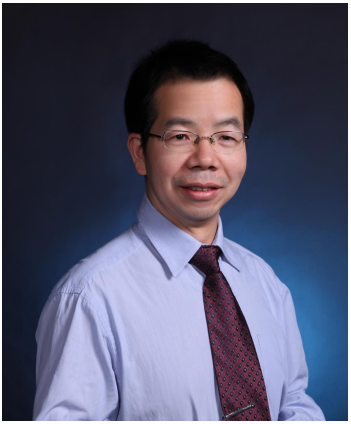
Only 2% of students reached the highest level of achievement, where they were able to reflect on methods and products available on the internet. Across all participating countries, girls outperformed boys in CIL. Internationally, boys performed slightly better than girls in CT.

Some findings from other IEA studies were also introduced. For example, the TIMSS 2019 introduced problem-solving and inquiry tasks (PSI) based on digital devices to assess students' relevant skills by completing tasks, and computer-based assessments are becoming increasingly important. In addition, the PIRLS 2021 learned that about half of the participating countries released explicit statements on digital literacy in the fourth-grade language & reading curriculum. As a result, the PIRLS 2021 implemented Internet-based digital assessments.

IEA data can be used to monitor progress, identify challenges, and provide evidence for decision-making through the systematic collection and analysis of internationally comparable data.

Transforming Learning and Teaching to Smart Education with Digital and Intelligent Technologies

Professor HUANG Ronghuai, President of Smart Learning Institute of Beijing Normal University



The challenges imposed by the digital transformation of education from a global perspective and the approaches of implementation. Currently, global education faces common problems such as the disproportionate focus on hardware provision, the neglect of the marginal population, the lack of infrastructure, the lack of legislation on digital teaching, data security and privacy risks. In response, the UN Transforming Education Summit put forward three principles and recommendations.

The digital transformation of education refers to the process in which we continuously use digital, network and smart technologies and tools to revolutionize the education system, including three core elements, namely data resource, universally accessible learning platforms, and reliable algorithms. According to him, smart education has three levels, namely smart learning environments, new teaching modes, and modern education systems. The new education mode, constructed by intelligent technologies and students as social beings, should include three ecologies, namely smart education, intelligent education and future education. The key to smart education is “wisdom”, emphasizing that wisdom should come from the teacher. The key to intelligent education is capacity, which constitutes the environment of education. The key to future education is change, such as the change in the form of education.

As a national education think tank, the China National Academy of Educational Sciences attaches great importance to smart education, and has formulated the China Smart Education Bluebook (2022) and the “1+3” development index report by gathering the practical explorations and research results at home and abroad, seeking expertise from various fields and building consensus.

Evaluation of Smart Education Development

A Global Education Monitoring Report Perspective

Mr. Manos ANTONINIS, Director of Global Education Monitoring Report

We should always start with good education to discuss the relationship between technology and education. 1.We should look at the key education challenges, and how can technology help to address them. The first is how can we improve access, equity and inclusion in education. And technology, of course, has vast potential to help us access disadvantage groups, hard to reach learners, whether they live in remote areas, whether they have a disability, whether they are struggling at home, and with parents who cannot support them, therefore need catching up sessions that perhaps technology can offer. The second major challenge for education systems is quality. Technology should be used to engage students and help teachers deliver better lessons. Schools should provide the foundations that learners can have in order to continue learning and improving their skills even after they have left school. The third big question is technology development. Education systems should engage the institutions in order for them to be ready to both absorb technology transfer, but also help countries develop their technology potential. The fourth important question is system management. We can harness technology to manage more data flows so that we can use them and improve learning and improve system management. 2. Three aspects of conditions need to be met for this potential to be realized. First, we need to consider how education systems identify, select, finance, procure and maintain technologies. The second and related question takes into account that good governance are necessary, and that also affects legislation and regulation in order to protect learners from potential risks. And third, last but not least, is teacher preparation. This includes using and dealing with technology in the classroom, as well as how technology can be used to develop teacher skills.

He also commented on how China defines smart education as well as the index system. First, to make sure that the disparities could be observed between rural and urban areas, or between students from families of different economic background. Second, in terms of the set of indicators which relate to the personalization of pedagogy, we need to assess not only what learners do, whether they access the resources, digital and curricular resources that are available, but also to what extent access to these resources easily to improve learning. Third, a focus on cost efficiency could be strengthened in the monitoring framework. Finally, it is important to define clearly what the digital competencies are.

Assessment: A Pathway to Smart Education

MA Xiaoqiang, Director of Institute of Education Statistics and Data Analysis, CNAES

Education transformation is the aim of education digitalization strategies. Its essence consists in establishing a new education mode, and its goal is the development of smart education, which is mainly characterized by the integration of various elements and the interaction between human beings and other elements, the intelligent design and the individualization of teaching and learning. Based on these characteristics, the research team explored and constructed the smart education development assessment indicator system, which comprises 4 primary dimensions, twelve secondary dimensions, thirty-two comprehensive assessment indicators. Based on the systematic collection and sorting of the relevant data from home and abroad, the research team calculated the comprehensive index of smart education development, the basic education index, the vocational education index and the higher education index for 2022.

Overall, by 2022, seven achievements had been made in smart education in China. The construction of infrastructures and equipment environment was basically completed. The digital literacy of middle school and primary school teachers was raised across China. Blended teaching was popularized. The basis of education data governance was established. The school management informatization and network safety system construction were largely completed. About 80% of the primary and middle school students reached “qualified level” or above in terms of digital literacy. The scale of talent cultivation for digitalization-related talents has reached a top level globally.

The results of the assessment revealed that smart education in China still has room for improvement in five aspects. First, digital education's resource supply and service capacity are yet to be improved. Second, the universal accessibility of online learning space has not been fully realized. Third, the deep-level, normalized and whole-process application and transformation of smart education have not been realized. The popularization level of school data applications is yet to be raised. The digital literacy of the whole population needs substantial improvement.

Looking into the future, the smart education of China should focus on the following four points. First, the digital bases for smart education should be strengthened by optimizing platforms. Second, smart education and teaching development should be promoted, with deep applications being the center. Third, the smart governance of smart education should be established and driven by data. Fourth, a new scenario of talent cultivation in the digital era should be opened up to raise the digital literacy of the whole population.

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