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THE CURRENT SITUATION AND CHALLENGES OF EDUCATION INFORMATIZATION IN EUROPE

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Abstract: In order to grasp the actual situation of the process of educational informatization in Europe, the European Commission conducted surveys on ISCED schools at all levels in EU countries in 2013 and 2019. Based on the analysis of three aspects in the second round of school survey report in 2019 (acquisition of digital technology in EU schools, use of digital technology, digital policies, strategies and opinions of schools, etc.), the article finds that the construction of European education informatization is currently. This stage is facing challenges in three aspects: the unbalanced process of education informatization, the poor digital learning environment, and the digital capabilities of teachers and students lagging behind the requirements of the times. He also pointed out that in order to promote the development of the overall level of European education informatization, the three levels of the EU, member states, and schools need to work together to create the best environment for teachers, students, and the whole society to use digital technology safely and equally.
Keywords: Europe; Education informatization; ICT (information and communication technology).

1 BACKGROUND

The advent of the information age has put forward new requirements for talent training, and the continuous development of information and communication technology (ICT) has also profoundly affected the direction of educational reform. Since the beginning of the 21st century, countries around the world have paid more and more attention to the application of ICT in the field of education, and have carried out many useful explorations in cultivating information talents for the new century.

Europe is one of the first regions to promote education informatization. In the early 1990s, with the gradual popularization of multimedia computers and the Internet, some European countries began to formulate national policies to promote the application of information technology in education [1]. Since the new century, with the Lisbon Strategy (Lisbon Strategy 2000), "The eLearning Action Plan" (The eLearning Action Plan 2001), the EU "Education and Training 2010 Plan" (ET2010), the EU "Digital Literacy Project" and With the introduction of a series of policies such as the "Digital Education Action Plan", the focus of European digital education policy has shifted from infrastructure construction to the application and innovation of technology and the improvement of teachers' information literacy [2].

In order to fully understand the development of education informatization, the European Commission (European Commission) began to investigate the situation of school education informatization in European countries in 2013, and released the investigation report to the public. In 2019, the EU completed the second round of the European School Informatization Survey and released the survey report - "Second Round of School Survey: ICT (Information and Communication Technology) in Education". The report reveals the status quo of digital education such as digital technology equipment in schools, student and teacher use of digital technology, school support measures, and stakeholder attitudes towards the use of ICT in teaching in specific European regional environments. The achievements and deficiencies of education provide reference for the region or country in implementing digital education and cultivating teachers and students' digital literacy. To a certain extent, it has reference value for my country's education informatization.

2 OVERVIEW OF EUROPEAN EDUCATION INFORMATIZATION RESEARCH

2.1 Research Content

The scope of this survey includes 28 EU member states (2019), Norway, Iceland and Turkey, and mainly collects the availability of information infrastructure, confidence in their own digital capabilities, attitudes towards informatization and related policies, strategy information. Specifically, it can be divided into three aspects: the acquisition of digital technology, the use of digital technology, and the school's digital policy, strategy and opinion (Table 1).

2.2 Research Objects and Methods

The survey is an online survey conducted among students, teachers, principals and parents in the surveyed areas. The regions surveyed were 31 countries (28 member states of the European Union, Iceland, Norway and Turkey) and the schools surveyed covered target groups at three different levels of the International Standard Classification of Education

(ISCED) (ISCED level 1: Primary; ISCED 2 Level: Lower Secondary; ISCED Level 3: Upper Secondary), principals, teachers, students, and parents were interviewed at each school. Among them, one teacher is selected from each ISCED level 1 school, three are selected from ISCED level 2 and 3 schools respectively, and students are randomly selected from one class of each school and each level except ISCED level 1.

3 CURRENT SITUATION OF EDUCATION INFORMATIZATION IN EUROPE

Looking at the findings across the 31 countries, the higher the level of ISCED, the more likely a student is to attend a school that is highly digitally equipped and connected.

Table 1 Main Contents of "Second Round School Survey: ICT (Information and Communication Technology) in Education"

Access to digital technology		use of digital technology		Digital policy, strategy and advice for schools	
category	entry	category	entry	category	entry
Internet connection	network connection type	Teachers use digital technology	Teachers' Use of Digital Technology in the Classroom and Cognitive Use Disorders	School digital policy, strategy	support measures
	internet speed		Digital Activities for Faculty		Incentives
	Wireless connections		Teachers' Confidence in Digital Ability		innovation policy
	The school's specific network connection location		Professional Development of Teachers' ICT Capabilities		principal's opinion
digital device	computer	students using digital technology	Students' classroom use of digital devices	Views on the use of ICT in teaching	teacher's opinion
	whiteboard		Digital Activities for Students		student opinion
digital content	External network teacher and student e-mail		Confidence in Numerical Abilities of Students		parent's opinion
	virtual learning environment		Student's Digital Home Environment		
	Technical Support				

3.1 Acquisition of Digital Technology

There are four types of networking methods for schools in the surveyed countries: ADSL, Cable, optical fiber, and satellite. Among them, most of the students' schools access the Internet through ADSL and optical fiber, and the proportion of students accessing the Internet through satellites is very small (ISCED1: 3%, ISCED2: 1%, ISCED3: 1%). However, the proportion of students attending schools connected by fiber optics varies between ISCED levels, between countries, and between school locations (large cities versus rural or small cities). At the same time, the Internet speed of schools across Europe varies greatly. The Nordic countries have a higher average Internet speed, while many other countries are far below the European average. With regard to the configuration of digital devices (desktop computers, notebooks and tablets; whiteboards), there are large gaps between countries and between ISCED levels, both in terms of device configuration level and device operability.

3.2 Use of Digital Technology

For digital technology to truly be used in teaching, it requires not only Internet connectivity and digital devices, but also the use of students and teachers.

3.2.1 Students' use of digital technology

First, students' digital activities and confidence in digital abilities. In this survey, only ISCED Level 2 and Level 3 students participated in the survey, so only ISCE Level 2 and Level 3 students have data. According to the survey, more than half of ISCED Level 2 and ISCED Level 3 students use the Internet for study at least once a week. Commonly used digital devices for learning during class are students' own smartphones, school desktop computers, students' own notebooks and tablets. See Table 2 for the frequency of use.

Table 2 Equipment usage by European ISCED level 2 and level 3 students

use equipment / usage frequency	level	use your own smartphone	use a desktop computer	own notebook	own tablet
at least once a week	ISCED 2	30%	>50%	12%	8%

	ISCED 3	53%	>50%	15%	8%
(almost) never used	ISCED 2	50%	20%	82%	85%
	ISCED 3	25%	twenty four%	74%	87%

Digital activities of students in the classroom include: participating in online training, educational software, games, apps and tests, programming, experimenting with desktop computers, mobile phones, tablets, using computers for teamwork, sending emails, using Word documents, chatting online classwork, find resources, and more. Among them, the situation of students programming is relatively small, and the situation of using digital technology to find resources is relatively common. There are differences in students' confidence in digital ability in the field of ability and gender.

In the five dimensions (information and data literacy, communication and collaboration, digital content creation, security, problem solving) of the European Digital Competence Framework for Citizens (also known as the "Digital Framework" (DigComp), students are Most confident in digital content creation and collaboration, less confident in digital content creation and problem solving, and least confident in programming. In terms of gender, boys are slightly more confident than girls in communication problem solving, information and data literacy, and safety, but girls are more confident than boys in communication and collaboration.

Second, students' digital home environment. The digital technology equipment conditions of students' families are relatively ideal. Students can use computers (desktop computers, notebooks, tablets) and smart phones to study at home. More than 90% of students have access to computers (desktops, laptops) at home. However, parents' monitoring and support for students' use of digital technology at home needs to be improved. Whether it is the level of parents' understanding of students' online activities or the monitoring of students' online activities by parents, it is not optimistic. Fifty-nine percent of parents of ISCED Level 2 students reported little awareness of their child's online activities, while 73% of parents of ISCED Level 3 students did not implement any parental control tools. Meanwhile, more than half of ISCED level 2 and 3 students never had parental support in doing homework that required the use of ICT.

3.2.2 Teachers' use of digital technologies

First, teachers' use of digital technology in their lessons. The use of ICT in education depends largely on teachers' experience with digital technologies. According to the survey results, most teachers have more than 6 years of experience in computer and Internet use, and few have less than one year of experience. Compared to the results of the first wave of school surveys, teachers who used ICT in their curriculum (25%) taught ISCED level 1 and 2 students 42% and 26% more respectively. In addition, teachers believe that the biggest factor hindering teachers' classroom use of ICT is the insufficient supply of digital devices (especially the insufficient number of tablets and notebooks).

Second, teachers' digital activities and confidence in digital competence. Teachers' digital activities include using ICT in the classroom or preparing for lessons, providing individual feedback and support to students, and communicating with parents. Of these, more than 90 percent were taught by teachers who used ICT in the classroom or in lesson preparation. The survey report's survey of teachers' confidence in digital capabilities also starts from the five dimensions of the citizen's digital capability framework. According to the survey, teachers seemed to have the most confidence in DigComp for safety, communication and collaboration, and information and data literacy, but considerably less confidence in coding or programming apps or robots. At the same time, there are gender differences in teachers' confidence in numerical ability. Male teachers seem to be more confident than female teachers in the five competency domains at different levels, especially in the ability of "information and data literacy", male teachers are more confident than female teachers in creating and maintaining blogs and websites.

Finally, the professional development of teachers' ICT capabilities. There are many ways to professionally develop European teachers' ICT capabilities: independent study in spare time, ICT training provided by schools, online communities or other collaborative networks, etc. More than 60% of the students were taught by teachers who had personally studied ICT in their spare time; 44% of ISCED level 3 students and 60% of ISCED level 1 students were taught by teachers who had received ICT training provided by the school; teachers You can also develop your digital competencies by participating in online communities or other collaborative networks. In terms of time commitment, approximately 50% of students' teachers have invested more than 6 days in professional development over the past two years.

3.3 SCHOOL DIGITAL POLICY, STRATEGY AND OPINION

First, the school's support strategies and incentives. School policy support for digital technologies includes: a policy on the use of open educational resources, a policy on the use of ICT for teaching evaluation and engagement in communication, a written statement dedicated to teaching with ICT, a written statement on the use of ICT, a regular policy on the use of ICT in teaching Discussion etc. Among them, organizing teachers to regularly discuss the use of ICT in teaching is the most common support provided by schools for digital technology. At the same time, many schools have implemented policies to reinforce responsible online behavior among students. In addition, most schools have dedicated teaching staff to maintain these digital devices in the school and an ICT coordinator to guide and support teachers in using ICT in teaching. In the digital environment, schools have also adopted some targeted incentives to encourage teachers to use ICT in teaching, such as reducing teaching time, awarding honorary titles, conducting

competitions and setting rewards, financial incentives, additional teaching ICT equipment and Participate in measures such as additional training in digital technologies. Of these, the most common incentive for teachers to use ICT in teaching is the provision of additional training time.

Second, the school's innovation policy. Innovation capability and creativity are considered to be important driving forces of the knowledge society in the 21st century [3]. At the same time, creativity and innovation can be developed, so teachers and schools can cultivate students' creativity and innovation. And proficient digital skills are considered to be one of the important factors to participate in and promote innovation. Strategies and policies that support the use of digital technologies in teaching and learning can therefore foster innovation in school instruction. The survey results show that schools need to do more in terms of innovation policy. More than 50% of students attend schools with policies that encourage innovation, but less than 30% of students attend schools that have implemented policy statements on innovation in teaching methods or school organizations, and about 30% of students attend schools that have change management training program.

Finally, stakeholder attitudes or views on the use of ICT in teaching. As schools integrate digital technologies, it is important that principals, teachers, parents and students are fully aware of and buy into these technologies and the possible benefits of their use. Positive attitudes towards digital technologies are key to successful policy implementation in schools. According to the survey, both teachers and principals have a positive attitude towards the use of ICT for learning and teaching, believing that the use of ICT in teaching and learning is critical to preparing students for life and work in the 21st century.

In schools at all levels of ISCED, more than 90% of principals and teachers believe that ICT can enable students to learn in a more autonomous and cooperative manner, and at the same time enable students to retrieve information, do exercises and contact, and solve problems. benefit. 90% of ISCED level 2 and level 3 students believe that the use of ICT in the classroom has a positive impact on concentration, memory, learning autonomy, cooperation ability, comprehension ability and classroom atmosphere.

In this age of technology, parents' positive attitude towards digital technology is the key to the successful implementation of ICT in schools. Academic achievement should therefore be rooted in a supportive school family atmosphere. [4] To be sure, most European parents believe that digital technology can help their children learn more effectively. The survey results show that parents realize that the world has changed and that the use of ICT in schools is fundamental to preparing young people for the future. In fact, some 90% of parents of European students believe at least in part that the use of ICT in schools will help their children find jobs in the labor market.

4 CHALLENGES FACED BY EUROPEAN EDUCATION INFORMATIZATION

4.1 The Allocation of Digital Infrastructure Needs to be Balanced

In this research report, the imbalance of digital infrastructure is mainly reflected in different levels, between European countries and between schools inside and outside big cities. There are huge differences in the ratio between numbers).

First of all, the difference in network connection is mainly reflected in the differences in three aspects: networking mode, network speed and wireless local area network connection. At the ISCED level, there is a more than 20% difference in the percentages of students attending schools with fiber optic Internet access versus wireless LAN access for Level 1 and Level 3 students. At the national level, there are also gaps in the level between countries. For example, in terms of the national level of access to the Internet through optical fiber, more than 80% of students in Denmark study in schools that access the Internet through optical fiber, while Germany’s ISCED levels are 10% to 20% lower than the European average at all levels; in Denmark, Sweden, In Estonia and other countries, the proportion of students enrolled in high-speed network (more than 100 megabits) is much higher than the European average, while in Italy only 1% of ISCED level 1 and level 2 students and 10% of ISCED level 3 students are enrolled in high-speed network (over 100 megabytes). In Finland, the proportion of students studying in schools that can connect to wireless LAN at all levels of ISCED far exceeds the European average, as high as 80%~90%, while in Lithuania, all levels of ISCED are higher than the European average 13% lower. There is also a large disparity in the location of schools within and outside major cities, with students attending schools in major cities more likely to access the Internet via fiber optics and to connect to wireless LANs across all levels of ISCED. Meanwhile, across all levels of ISCED, only 8% of students in rural or small urban schools attend schools with internet speeds over 100 Mbps, and even 12% of ISCED level 1 students attend schools with internet speeds below 2 Mbps. school.

Secondly, the differences in digital technology equipment are mainly reflected in the differences in equipment standards and equipment operability. On the ISCED level, the computer configuration level of ISCED1 level is much lower than that of Level 2 and Level 3. The ratio of students to computers in Level 1 of ISCED is 1:18, while in Level 2 and Level 3, the ratio increases to 1:7 and 1 :8. The whiteboard configuration is just the opposite. Compared with ISCED level 1, the number of students sharing a whiteboard in level 2 and level 3 is doubled. The proportion of students attending schools with more than 90% operational equipment differed significantly between ISCED levels 1 and 3 (ISCED level 1: 61%, ISCED level 3: 73%). At the national level, there are also certain gaps in the level of countries. For example, Slovakia's computer and whiteboard configuration levels far exceed the European average level at all levels of ISCED.

While in Bulgaria, 19 ISCED level 3 students shared a computer and 302 students shared a whiteboard; on average more than 90% of ISCED level 2 students in Malta, Austria, Estonia and Denmark used 90% of the devices that were operational. In Croatia, Romania, and Italy, less than 50% of students at ISCED levels 1 and 2 attended schools with more than 90% of operational devices.

4.2 The digital Learning Environment Needs to be Improved

The student's digital learning environment includes the student's digital technology environment at school and at home. According to the survey results, there is a certain gap between European teachers and students in the use of digital technology in schools. At the same time, national policy makers need to pay more attention to differences in the digital environment of the home, so that students can use digital technology safely and equitably.

4.2.1 There are national and regional differences in the school digital learning environment

There is a certain gap at the national level in the situation of students using the Internet for learning and learning with their own devices. The Nordic countries (Iceland, Denmark, Sweden) have a particularly high proportion of students using the Internet for their studies. Students in Denmark, for example, score well above the European average when it comes to using computers in the classroom. In contrast, there are still many countries whose level of learning using the Internet is lower than the European average. For example, in ISCED level 2, Slovenia has the lowest proportion of students using the Internet and computer learning. There are a large number of students in Europe as a whole who have never used their own devices (the devices in this survey include smartphones, notebooks and tablets), and more than 80% of students in ISCED level 2 and 3 have never used their own notebooks and devices. Tablets, 50% of ISCED level 2 students and 25% of ISCED level 3 students did not use their smartphones. At the same time, the use of BYOD for learning varies widely at the country level. Compared with the European average, Danish students use their own smartphones and laptops in particular, students in Estonia, Lithuania, Latvia and Finland use their own smartphones more than school-provided computers, while Malta is in the ISCED3 Only 5% of students in the first grade use their own devices for learning.

At the same time, the school's digital learning environment is closely related to teachers' digital technology use and skills. According to the survey results, most of the ISCED teachers at all levels have more than 6 years of experience in computer and Internet use, and few have less than one year of experience. At ISCED level 1 in Croatia, only 52% of the students are taught by teachers with more than 6 years of computer and Internet experience. In other countries, including Portugal, Lithuania, and Denmark, close to or more than 90% of students are taught by teachers with more than 6 years of computer and Internet experience. In addition, there are country-level disparities in the intensity with which teachers use ICT in their curricula. For example, in Sweden, Malta, the UK and Denmark, 90% of teachers of ISCED level 1 students use ICT in more than 25% of their lessons, compared to only 25% of students in Iceland.

4.2.2 The home digital learning environment lacks security and has differences

First, the digital technology monitoring and management capabilities of students' parents need to be improved.

Lift. Children should develop safe and valuable digital literacy skills according to their developmental stage. However, the internet and digital technology can also pose risks. Therefore, students' digital activities at home and the use of digital technology capabilities require parental management and support. In this survey, although most students are equipped with digital technology facilities at home and can study online through computers, smart phones, etc., parents are not capable of managing their children's use of digital technology. Nearly half of the parents of ISCED level 2 and 3 students had low awareness of their children's online activities, and some parents even said they had no knowledge of their children's computer use. Not to mention parents implementing control tools over their children's use of digital technology, even at ISCED1 level, nearly one-third of students' parents did not implement any parental control tools. In terms of safe and responsible Internet use, most ISCED Level 2 and 3 students have never discussed the risks of the Internet with their parents, and some parents even stated that they have no confidence in teaching their children how to use the Internet safely and responsibly.

Second, the differences in household digital environments in different countries or regions need to be narrowed. Although most students in Europe are able to use computers at home, and according to the survey on household and personal use of ICT organized by Eurostat, the proportion of households using the Internet has increased in the past few years. But also watch out for low socioeconomic background households that don't have the digital infrastructure. At the same time, the use of smartphones and tablets by students at home varies considerably across ISCED levels and countries. For example, 90% of ISCED3 students in Finland have access to a tablet at home, compared to 46% in Bulgaria. In Finland, 100% of ISCED level 2 students and 98% of ISCED level 1 students use a smartphone at home, compared with 60% and 49% respectively in the Czech Republic.

4.3 The Digital Ability of Teachers and Students Needs to be Improved

At the student level, according to the results of this survey, among ISCED Level 2 and 3 students, many digital resources and tools are actually never used by students, for example, more than 70% of students have never used data logging tools and Picture editing tool. Students at ISCED level 3 have a higher percentage of students engaging in

digital activities on a daily basis than students at ISCED level 2. Coding ability is an important part of digital skills, yet more than 70% of students never engage in coding activities.

At the teacher level, teachers need to improve their skills in using digital technology in ways other than preparing or delivering lessons. Teachers' digital activities in teaching fall into three broad categories: using ICT in the classroom or preparing for lessons, providing individual feedback and support to students, and communicating with parents. At present, European teachers mostly use ICT for lesson preparation or teaching, while the utilization rate needs to be improved in other aspects. Specifically, teachers use ICT technologies (e-mail, applications, online tools) to communicate with students, create digital resources, and post assignments online. For example, in ISCED Levels 1 and 2, more than 70% of students' teachers never used email or apps to communicate with students.

5 DISCUSSION AND SUGGESTIONS

5.1 The Process of Informatization Construction should be Balanced

The results of this survey show that the overall level of informatization in Europe is constantly improving. Compared with 2013, the number of schools using optical fiber to access the Internet has increased significantly, the number of whiteboards in ISCED1-level schools has increased, and teachers use ICT ISCED in courses (25%). Level 1 and Level 2 students increased by 42% and 26%, respectively. However, there are big differences between countries and between urban and rural areas, whether it is the standard of digital equipment (commonly used ratio, that is, the ratio between the number of students and the number of devices), or the network connection. The use of information technology will bring Come to the new issue of educational equity. For example, urban schools have better Internet speed and higher level of digital equipment configuration, and the original gap between urban and rural schools will further widen. Only by realizing the balanced development of informatization level can we promote the improvement of European informatization level in a real sense. Therefore, it is necessary to jointly promote the balance of the European education informatization construction process from the following three levels.

5.1.1 The EU needs to increase capital investment

The EU should continue to increase investment and policy support for digital education projects through fiscal policies and appropriations, especially to countries and regions with backward informatization levels, and invest a large amount of funds in the construction of digital infrastructure in backward countries or regions. In order to continuously narrow the gap in the degree of education informatization in various countries or regions.

5.1.2 EU member states should pay attention to the development of domestic digital education

Responsibility for education rests with member states, and education policy action at the national and local levels is what matters, especially in less developed countries. Each member state should formulate a digital education development strategy according to its own actual situation of digital education development according to local conditions, especially for countries with a low level of education informatization. For example, Ireland has formulated the "Digital School Strategy", emphasizing the necessity of establishing a digital learning framework and expecting to improve the application efficiency of ICT in the field of education. At the same time, member states should encourage public use of digital technologies in their official policies. For example, in Denmark, the proportion of students using the Internet is very high, and it is also common to use their own digital devices for learning in class. This is related to the "official policy - Bring Your Own Device (BYOD)" implemented by Denmark. In Denmark, more than two-thirds of schools have adopted the policy, which allows students and teachers to bring their own personal devices to school and use BYOD to access information, apps and services for learning activities.

5.1.3 Schools should vigorously encourage the use of digital technology

First of all, all schools should be encouraged to use various self-assessment tools to understand the use of digital technology in schools and the position of schools in using digital technology for teaching and learning, so as to provide basic information for promoting digital education.

Second, schools should take every opportunity to strengthen digital technology infrastructure, provide teachers and students with sufficient network capacity and bandwidth speed (30Mbps to 100Mbps per classroom) to meet digital learning and establish a sound wireless infrastructure, so as to effectively Connect student and staff devices to the internet and ensure connections are authenticated, reliable, and secure.

Thirdly, the school should formulate a written statement on the use of ICT, formulate appropriate incentives to encourage teachers and students to use digital technology, and can also carry out various ICT activities to enhance teachers and students' attention to the use of ICT in teaching and encourage teachers and students to use ICT . For example, various forms of ICT competitions can be held, and teachers and students with outstanding performance can be rewarded.

Finally, school leaders should improve their digital technology capabilities, especially management capabilities, and play an exemplary role. Research shows that for schools to effectively support the use of digital technologies in schools, certain conditions need to be in place. These conditions go beyond having a sufficient amount of ICT infrastructure and effective training of teachers. It is also important that the school leader or ICT coordinator have a clear and shared

vision for the use of ICT in the school. School leaders can play an important role not only in promoting ICT use, but also as gatekeepers when necessary. [5]

5.2 The Home Environment for Digital Learning Needs to be Optimized

The use of digital technologies in the home environment guarantees continuous learning and enables the development of high quality digital skills. Given the risks that the internet can pose, students need the help of their parents to use digital technology safely.

First of all, it is necessary to improve the digital technology monitoring and management capabilities of parents of students. The EU should continue to carry out several existing activities, such as SaferInternet4EU" and "Strategy for a Better Internet for Children" to help parents of students understand cyber risks and challenges, and raise their awareness of safe and responsible use of digital technology. National and school levels can also use various forms of activities to strengthen the publicity of safe use of Internet knowledge, such as creating an information service website for families, teaching teams and local governments, introducing the benefits of digital teaching and the importance of digital education programs in schools, Provide all stakeholders with various practical tools and information, etc., so that parents can understand the latest digital education practices.

Second, we must pay attention to the differences in the home digital environment. Resources for digital learning at home must be equally accessible to all to avoid any new inequalities created by ICTs. Policymakers at all levels (including EU, member state and school levels) should scale up digital support for families with low socioeconomic status. For example, in the form of discount subsidies, support low-income student families to purchase computers and smart phones.

5.3 The ICT Capabilities of Teachers and Students should be Generally Improved

First of all, the coding activities of teachers and students should be popularized. The "Coding Week" activity launched by the European Union aims to encourage 50% of European schools to participate by 2020. EU Coding Week makes programming more visible and shows how ideas can be brought to life with code. The EU should continue to carry out activities such as "Coding Week" to make it penetrate into the hearts of all teachers and students.

Second, teachers' ICT capabilities must be continuously developed. In order to effectively use and integrate digital equipment and content in teaching practice, teachers' ICT capabilities are inseparable. The channels for teachers' ICT professional development should be more diversified, and the training content should also be based on the actual needs of teachers. Because teachers have different educational backgrounds, ages and subjects, their abilities and demands for using ICT are also different. Therefore, before the training, we can conduct a thorough test on the informatization level of teachers at all levels and types of schools to determine the needs of the trainees, and design different training content and training methods for teachers with different abilities.

How to give full play to the role of ICT in promoting education and avoid any educational equity issues brought about by information technology is not only a long-term consideration for Europe, but also a difficult problem for countries all over the world. The Chinese government has launched a series of measures such as the "National Educational Technology Capacity Building Plan for Primary and Secondary Teachers", "National Educational Technology Capacity Building Plan for Primary and Secondary Teachers", and "Modern Distance Education Project for Rural Primary and Secondary Schools", which have promoted the process of education informatization, but China's The road to the development of education informatization still needs to continue to work hard.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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