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Information technologies in the education of contemporary China: reality and opportunities

With the rapid development of modern information technologies, their integration into all areas of education is accelerating, which contributes to the penetration of innovations into the education space. The author emphasizes that the design of many educational technologies was focused on the goals of education and included a sufficient number of educational concepts and elements. However, if teachers blindly adhere to the traditional concept of "technology is only a tool", then this creates a sense of superiority of their own status and a narrow understanding of the value of technology.

The author relies in his research on the latest achievements in the field of not only high technologies that are used in education, but also on psychological and social research on the impact of the latter both on education and on a person. The author proposes to perceive technologies in the context of a new culture, and shows possible ways of their more adequate use. Working with artificial technological objects is not only the acceptance of an artificial object, but also the adoption of a technical culture, which indicates a new cultural relationship between people and technology, and vice versa. On the basis of analyzing the phenomenon and essence of contemporary information technology, the author of this article tries to find out the problems existing in the application of contemporary information technology in education through a questionnaire survey, and reflects on the influence of technology on teachers and students in the education system.

The answers of the survey participants made it possible to present a picture of the use of information technologies in education as a holistic and complex process. The analysis of the results obtained, as well as everyday practical training in the skills of using high technologies, enabled the author to establish that the influence of information technologies on education is complex, this is a new stage in the development of education as a whole, which allows us to characterize the process of their use as a holistic system. The influence of technology has completely changed all structures and all participants in education. The results of the survey also made it possible to identify a number of problems that indicate shortcomings in the modern space of education, the didactic nature of learning in the sense of conveying and receiving information in new conditions (we are talking not only about digitalization as a process, but also about changes aimed at transforming teaching methodology).

Keywords: *education, high technology, 'smart classroom', 'flipped classroom', basic needs for information technology, integration of information technology in education, adaptation to the information environment.*

Introduction

In recent years, more and more scientists have begun to pay attention to the impact of contemporary high technology on education and discuss it from different dimensions and perspectives. The representatives of philosophical phenomenology, such as A. Borgmann, D. Ihde, A. Schutz and others, have pointed out the intermediary role of technical artifacts, and the enlightenment brought to us is that we can analyze the current situation of technology application in the field of education from the perspective of technical artifacts [Borgmann 1984; Wu 2022; Schutz 2010]. Moreover, using Schutz's theory of behavioral meaning to analyze the interaction between teachers and technology, we can identify the reasons why technology is not effectively integrated into teachers' teaching practices. Guided by the new concept of smart education, Y. Xie, S. Cai , X. Yang, X. Wang and others have actively carried out the application practice of smart classroom, and proposed different smart classroom teaching modes [Xie & Li 2020; Cai et al. 2021; Yang et al. 2020; Wang et al. 2021; Zhu 2014; Zhuo & Xiao 2019], which indicates that contemporary information technology is changing the way of teaching and learning by empowering the teaching environment. P. Bourdieu, R. F. Kizilcec, L. Barnard, J. Broadbent, G. Miao and others analyzed the influence of social culture, habits and self-regulated learning on the technical acceptance of teachers and students from the perspective of sociology and psychology [Miao 2015; Barnard et al. 2009; Broadbent 2017; Bourdieu 1998; Kizilcec et al. 2017].

Therefore, the purpose of this study is to analyze the phenomenon and essence of contemporary information technology based on the phenomenological analysis of philosophy of technology, and to examine the technical problems in contemporary education in a new perspective. Seeking the root of the problem and analyzing how technology affects the teaching and learning of teachers and students in educational contexts. Do T-led educational reforms bring about changes in learners' behaviors, habits, attitudes, preferences, and other dimensions? Trying to answer the question, the author reflect on the impact of technology on teachers and students in the education system.

Information technology as an integral part of education

Based on the investigation of technical artifacts, A. Borgmann offers a metaphysical explanation of the essential structure of contemporary technology, arguing that the essential structure of contemporary technology

is 'A device paradigm'. He uses a phenomenological method to investigate the nature of contemporary technology, arguing that "whether it is technology as knowledge, or technology as activity, will, or method, only by reducing it to the technology as artifacts can we have a concrete, perceptual and intuitive understanding of them" [Borgmann 1984: 123]. D. Ihde points out that technological tools have intentionality, which makes them not only play a mediating role in the relationship between human beings and the world but also replace the subject in thinking about the relationship between the two [Wu 2022: 208]. G.Miao pointed out that "according to the viewpoint of system science, technology use is a complex system composed of technical elements such as technical subject, technical object, technical object and technical situation" [Miao 2015: 226-231].

At present, a large number of technical artifacts exist in the field of education, such as multimedia projection, smart classrooms, virtual learning spaces, immersive classrooms etc. As new 'materials', they have constantly constructed new forms of education, such as flipped classrooms, intelligent classrooms, and the recently surfaced smart learning spaces. A flipped classroom also known as inverted learning, derives a series of concepts such as flipped learning, flipped teaching model and flipped learning environment. As a new classroom teaching paradigm, a flipped classroom began in the mid-1990s with a teaching experiment called the 'flipped classroom' at the University of Miami. In the fall of 1996, Maureen J. Lage and Glenn J. Platt, who taught at the University of Miami Business School, first proposed the idea of a 'flipped classroom' [Lage et al. 2000: 30-43]. The Center for Assessment, Adaptation and Extension Learning at the University of Wisconsin-Madison flipped one of its computer courses [Foertsch et al. 2002: 267-274]. Jeremy Strayer conducted a comparative study of 'flipped classroom' based on intelligent tutor system and traditional lecture-based classroom [Strayer 2007: 5-23]. Two chemistry teachers, Jonathan Bergmann and Aaron Sams, conducted a teaching reform experiment at Woodland Middle School in Colorado, USA [Bergmann et al. 2012].

Throughout the evolution history of flipped classroom, information technology with computer and Internet as the core is a prerequisite for the development of flipped classroom. The World Wide Web and multimedia computers used by Maureen J. Lage and Glenn J. Platt, the eTeach streaming media teaching software used by the University of Wisconsin-Madison, the intelligent tutor system used by Strayer, and the teaching recording software used by Jonathan Bergmann and Aaron Sams all show the fundamental role of information technology in flipped learning. In flipped learning, the main role of information technology is to record the traditional 'in-class' teaching activities, and then transfer them to 'after-class' ones via the network. This is the first step towards flipped learning, laying the foundation for the redesign

and efficient use of 'in-class' instructional time. Nowadays, the new generation of Internet technology represented by Web 2.0 undoubtedly provides more choices and support for the practice of flipped learning in the new era.

Smarter education supported by information technology can be traced back at least to IBM's "Smarter Planet" strategy. In 2008, IBM presented a good vision of "Smart Planet" in *A Smarter Planet: The Next Leadership Agenda* with the powerful support of the new generation of information technology (such as sensing technology, Internet of Things technology, mobile communication technology, big data analysis, 3D printing, etc.). Everything on the planet can be instrumented, interconnected and infused with intelligence [Palmisano 2008]. In the field of knowledge management, 'wisdom' is usually defined as a future-oriented innovation ability. From the DIKW (Data-Information-Knowledge-Wisdom) model, it can be seen that the evolution from data, information, knowledge to wisdom has increased the requirements for context and understanding [Easterbrook 2012: 10-13]. Wisdom education in the information environment refers to the education supported by information technology to develop students' wisdom ability. It aims at using appropriate information technology to build a smart learning environment (technological innovation), apply wisdom pedagogy (method innovation), and promote learners to carry out smart learning (practical innovation), so as to cultivate intelligent talents with a good value orientation, high thinking quality and strong ability to perform (change of talent concept), the implementation of the concept of smart education (conceptual innovation) can deepen and improve quality education in the information age, knowledge age and digital age [Zhu 2014].

Based on a brand new wisdom education concept, a smart classroom reshapes and upgrades a flipped classroom, by actively borrowing the successful experience of the flipped classroom application. It provides a typical example of smart education under the current stage of technical support. Xie Youru et al. described the smart classroom as a classroom with the goal of "cultivating talents with high intelligence and creativity", based on big data, learning analysis, and other technologies that can record learning process data, implement diagnostic analysis of learning situation and intelligent pushing of resources, and carry out support services and multiple intelligence evaluation [Xie, & Li 2020]. Relying on the advantages and potential of 5G-enabled smart learning environment, S. Cai and others mobilize students' multi-sensory functions to generate a smart classroom of "multi-modal resource integration, multi-modal interaction, and multi-modal evaluation" [Cai et al. 2021]. In order to promote students' construction of learning and coordinated development of 'tool, value and meaning thinking', X. Yang et al. constructed a smart classroom model of "problem perception, situation perception, technology perception and heuristic evaluation" [Yang et al. 2020]. Aiming at the production of wisdom considering rich media tools

and an intelligent environment, X. Wang and others have clarified the paths for developing students' literacy wisdom and thinking wisdom, learning wisdom subject wisdom, and moral wisdom, and constructed a classroom that supports students' personalized learning and teachers' group teaching. In short, the realization of the intelligent function of the classroom environment is inseparable from the upgrading of the structural elements and the reshaping of the process [Wang et al. 2021].

Flipped classrooms extend class time so that the class includes the time not only during class, but also before and even after class. While the smart classroom extends the classroom from inside the classroom to outside the classroom, and from the physical environment to the network virtual environment, forming a smart learning space. In terms of the reality of the place (whether the objects touched and things are real or not), learning space includes a physical space and a virtual space. From the perspective of functioning, the online personal learning space is the 'intermediate structure' that connects the guidance of others with independent learning. The smart learning space is a learning space in an intelligent learning environment.

How does the development of each new generation of information technology, such as computers, broadband, smart phones, tablets, and university MOOCs, affect the teaching and learning of teachers and students in the educational context? Information technology makes knowledge changed in representation form, storage mode, transmission carrier, main type and transmission mode. L. Chen pointed out that "the Internet-based information space expands the connotation of knowledge and proliferates the quantity of knowledge, and the resulting networked knowledge presents the characteristics of distributed storage, dynamic change, comprehensive fragmentation, knowledge dissemination with production, etc." [Chen et al. 2019]. Connectivism learning, which is accompanied by the new form of networked knowledge, is called "learning theory for the digital age" [Dolska 2018].

In 2005, George Simmons, a Canadian scholar first proposed Connectivism Learning in his article *Connectivism: Learning Theory in the Digital Age*. The theory was born in the Internet era, one of the characteristics of which is that the information is huge, cluttered and fragmented. The cycle of knowledge update is so shortened that we have to face a tidal wave of new knowledge every day. Connectivism learning theory proposes that learning is the process of network construction. Learning is not only to master the facts represented, but also to learn to identify and apply various modes. We can find that information technology has contributed to the change of human cognitive style, and the industrialization era has brought human cognitive thinking into the mechanical thinking paradigm. However, with the advent of the information age, especially the universal application of information technology such as artificial intelligence and 5G, the intelligent tendency of

modern society has become more and more obvious, and people's cognitive style is also accompanied by information technology into a new cognitive field [Dolska et al. 2016: 33-54].

Have the iteration and popularization of information technology brought about essential changes in schooling or individual learning? Technology has had a profound impact on human's living style, learning space and behavior. R. Huang pointed out, "At present, the new generation of information technology, such as the Internet, big data and artificial intelligence, is promoting restructuring and process reengineering in all areas of human production and life, and is also changing the organizational model and service model of education" [Huang 2022]. H. Ruswiati claims that "education is being connected to mobile devices through cloud applications and is no longer limited to the learning of knowledge, but extended to the acquisition of skills. With the expansion of global network services, physical boundaries are no longer a barrier to education" [Ruswiati 2019: 125].

Application of Information Technology: Statistics and Analysis

Have IT-led reforms in education brought about changes in teachers' and learners' behaviors, habits, attitudes, preferences, and other dimensions? To find the answer, we conducted a survey study covering two groups of teachers and students. The survey tool uses the Rickett's five-level scale (1-5 represent very inconsistent, relatively inconsistent, general, relatively consistent, and very consistent). The questionnaire was were distributed among the Chinese teacher and student groups, and 1060 valid Feedback forms were collected. Through the statistical analysis of the data, we identified some urgent problems to be solved.

1. Teachers' understanding of IT is still at a lower level of cognitive stage.

Among the teachers surveyed, 13.2% of them reported that they knew the meaning of information technology very well and that without IT, their daily teaching work would be seriously affected. 42.5 % of the teachers reported that they had a better understanding of the meaning of information technology and that their daily teaching was less effective without the IT technology application. 44.4 % of teachers reported that they did not understand the meaning of information technology and IT basically played no role in their teaching work. The collected data indicate that half of the surveyed teachers have a vague understanding of IT; in addition, compared with urban teachers, rural teachers' awareness of information-based teaching is weaker, showing a lack of initiative. For example, only when the Education Bureau requires to carry out corresponding open classes, do rural teachers passively use relevant digital resources and information devices, which they perceive as time-consuming and burdensome.

As shown in Table 1, the group of urban teachers as a higher interest in using information technology resources to improve teaching, while rural teachers are not as interested. The willingness of urban teachers to try to use the latest information-based teaching tools is significantly higher than that of rural teachers. Urban teachers are significantly more aware of informatization of their courses than rural teachers. Both urban and rural teachers have few results in building information-based courses. In teaching, teachers and students often need to make decisions about when and how to use technology. Each person does not choose between the two technologies, but between the technical approach and other approaches. The data show that some teachers reject technology.

Tab. 1. Willingness to use information-based teaching tools and resources

No.	Item	Teacher (Urban)		Teacher (Rural)	
		Mean (M1)	Std. Deviation	Mean (M2)	Std. Deviation
1	You are always interested in using IT resources to improve teaching/ learning	4.06	0.924	3.15	0.968
2	You regularly discuss with your peers how to improve IT teaching/digital learning	3.73	1.019	3.11	0.984
3	You will often try out the latest information technology teaching/ learning tools	3.83	0.961	2.68	0.931
4	You often take the initiative to use information technology to build your courses	3.92	0.967	2.97	0.874
5	You have your own IT course in progress	2.93	1.409	1.81	0.745

At present, many people's awareness of using of information technology in teaching basically stays at the level of "instrumental rationality". Information technology is often understood superficially and vaguely, degrading human rationality into an instrumental rationality [Li 2008]. A correct understanding of information technology is an important prerequisite for teachers to take appropriate action. Ge Xinbin et al. claimed that the problem of the digital gap caused by the difference of people's literacy, manner and ability to use information technology is becoming more and more prominent. Teachers have become the breakthrough point for bridging the digital gap in urban and rural education [Ge & Zhang 2021]. Our survey also confirmed the existence of a hidden gap (differences in teachers' ability to apply technology).

2. There is a large room for improvement in teachers' ability to creatively use information-based educational tools.

Information education tools are typical technical artifacts. Many teachers' use of information technology for teaching puprposes is limited to a 'skin function', and the mode of 'courseware + traditional teaching' is still dominant. The application of information technology by many teachers is limited to basic computer operation skills, and they show a lack of ability in collecting, organizing and analyzing information, resulting in the inability to deeply apply network resources to integrate, develop and set up an educational resource database suitable for the actual situation of their school. The results of the survey on the tools most frequently used by teachers during the outbreak: 57.5% of teachers often used live video technology tools, such as Ding Talk, Tencent meetings, etc.; 21.7% of teachers often use communication technology tools, such as WeChat, QQ, E-mail, etc. 15.1% of teachers often use classroom interactive technical tools, such as Xuexitong, Rain Classroom, Wisdom Tree and others, 1.9% of teachers often use resource integration technology tools, such as Chinese University MOOC, National Smart Education Service Platform and so on. 3.8 % of teachers often use other platforms. The Chinese government has issued relevant policies to encourage teachers to use the national intelligent education service platform to promote the integration and innovation of curriculum resources. However, from the survey data, the utilization rate of resource integration technology tools is still the lowest.

The current Internet technology platform has created opportunities for teachers and students to communicate through time and space and context, thus, giving them greater freedom and the greater challenge of facing independent choices. In this way, it also constitutes a new pressure on the subject, requiring them to have higher reflection, criticism and autonomy, thereby promoting human development.

3. The overall level of students' self-regulated learning ability is low and there are significant urban and rural differences.

In the context of online learning, L. Barnard believes that "online self-regulated learning is a process in which learners combine learning skills and beliefs to achieve learning goals in online learning, which typically includes six dimensions: goal setting, environment construction, time management, task strategy, seeking help and self-evaluation" [Barnard et al. 2009]. Further research found that learners' self-regulated learning is the main factor affecting learning performance [Broadbent 2017].

It can be concluded from our survey data that lots of students have not yet developed good online learning habits, and especially lack the ability to self-regulate their learning. 63.5 % of the students do not believe that online courses are as good as offline courses, and only 49.6 % of the students can actively adjust negative emotions when they encountered setbacks in online

learning. 59.5 % of the students can set their own learning goals according to the overall goal of the course; 58.7 % of the students are able to formulate corresponding learning plans according to the learning objectives; 63.1 % of the students are able to adjust their learning plans according to the actual situation; 63.5 % of the students are able to choose appropriate learning methods to benefit from their teachers' teaching content; 61.1 % of the students can objectively evaluate their learning situation. It can be seen from the survey results that many students demonstrate a weak self-regulated learning ability.

Tab. 2. The analysis of survey results on students' self-regulated learning skills

No.	Item	Teacher (Urban)		Teacher (Rural)	
		Mean (M1)	Std. Deviation	Mean (M2)	Std. Deviation
1	You believe that online courses are more effective than offline courses	4.10	0.949	3.77	1.035
2	You often seek help from your peers or teachers through online learning platforms	3.81	1.090	3.23	1.041
3	You are proficient in using various online learning tools, such as MOOC, Blue Ink Cloud Class, Rain Classroom, etc.	3.59	0.863	2.89	0.946
4	You often take the initiative to choose and build an information-based learning environment that suits you	3.63	1.214	3.16	1.150
5	You are always able to find suitable digital resources for learning	3.79	1.006	2.92	0.913
6	You are able to adjust your negative emotions when you encounter frustration in the process of e-learning	3.54	0.875	3.35	0.952
7	You are able to plan your learning according to your learning objectives	3.11	0.787	2.53	0.744
8	You are able to adapt your learning plan to changing circumstances	3.06	0.767	2.64	0.751
9	You are able to evaluate your learning objectively	3.12	0.631	2.42	0.648

The existing research results show that rural students have relatively low cognitive ability, and their preference and ability to use the Internet for information retrieval and learning are weaker than urban students. Similar results were obtained within the present study. It can be seen from Table 2 that urban students are better at using online self-regulated learning strategies. For example, they are more willing to seek help from teachers or other peers;

they have long-term online learning experience and are proficient in using a variety of online learning tools; they can find suitable digital resources for learning quickly and so on. Rural students performed significantly lower than urban students in several areas such as goal setting and adjustment, environmental construction, and self-evaluation.

Reasons for the problems arising from the application of information technology in education

The relationship between a teacher and technology seems to be a 'human-object' and 'subject-object' relationship, but behind any kind of technology, human values and thinking consciousness are implied. In this regard, A. Schutz, a representative of phenomenological sociology, gave a profound explanation. In Schutz's view, the actor (A) gives meaning (M) to a certain act (P) when it is performed, and when the act (P) is presented to other observers (B) through some external process, B will also make self-understanding and interpretation of P, thus forming the meaning of the act (M). The subjects A and B are based on their own daily life experience and thinking habit to give and understand the meaning of behavior (P), which inevitably leads to deviations in meaning understanding [Schutz 2010: 7].

Using Schutz's behavioral meaning theory to analyze the interaction between teachers and technology, it can be found that, on the one hand, because teachers do not comprehend the design intention of technology producers, or they have a relatively narrow understanding of applying technology independently, the relationship between teachers and technology often deviates from the expectations of technology producers and the original intention of technology introduction in the field of education. On the other hand, it is hard for technology producers to understand teachers' real intention and internal needs in using technology, and they have little in-depth experience of teachers' overall life situation (life intention), which leads to the difficulty in integrating technology into teachers' teaching practice effectively and even its being rejected by teachers. For example, community learning platforms such as Wiki or Google Group can themselves realize blended learning environments such as collaborative appreciation and peer evaluation between teachers and students, students and students. However, as teachers regard its function as a tool to assist the transmission and display of teaching content, it may be reduced to a means for publishing learning content and assigning homework in advance.

Looking at the various technologies that have entered a classroom today, we can see that the design of many educational technologies has been oriented to the goals of education and have incorporated enough educational concepts and elements. If teachers blindly adhere to the traditional concept

of "technology is only a means", it is likely to breed a sense of superiority of their own status and a narrow understanding of the value of technology, and then give up exploring its true meaning. Therefore, it is urgent for teachers to abandon the conceptual perception of technology as a mere 'tool' and 'means', and instead of that to take an educational perspective and stance on technology to understand the educational significance of their interaction with technology [Zhuo, & Xiao 2019].

From the perspective of psychology, Miao believes that the reason for the low willingness of teachers to use information-based teaching tools and resources is the lack of basic needs for information technology. Maslow's hierarchy of needs theory states that the premise of generating higher-level needs is that the basic needs of the previous level are met. Teachers, whose increasingly heavy work and life pressure coalesce, cannot spend more time and energy on the research and practice of information technology teaching. In addition, people under work pressure, work stress or work burnout are prone to uneasy psychological states such as fluke, paralysis, arrogance, dependence and herd mentality, which can affect the acceptance of technology [Miao 2015].

From the perspective of sociology, X. Ge believes that people's socio-economic status largely determines their motivation to seek information and their understanding of the function of information. Those who live at the bottom of the social ladder may only care about the most urgent information in life, and not care about others [Ge & Zhang 2021]. Some rural teachers live in remote rural areas with relatively low wages. Their most urgent concern is the smooth operation of daily teaching, which has not yet risen to the stage of pursuing the integration of information technology and teaching, that is, the situation of 'survival' has not been solved, and there is no 'development'.

The reasons for teachers' low level of application of information technology educational tools. P. Bourdieu, a sociological researcher argues that a 'habit is a socialized subjectivity that comes from the long-term practice of actors, and after a long period of accumulation, it is internalized into people's consciousness to direct and mobilize their behavior [Bourdieu 1998: 170]. For a long time, some teachers, especially veteran teachers, have formed their own inherent teaching inertial thinking in the original social environment. Some researchers have found that teachers produce instinctive resistance when they face the integration of technology into teaching, and the key to breakthrough lies in their ability to break their habits and carry out adaptive learning and innovation.

Does information technology bring about changes in learners' behavior, habits, attitudes, preferences and other dimensions? C-H. Wang found that "students with online learning experience are more likely to adopt efficient online self-regulated learning strategies" [Wang et al. 2013]. The relationship

between prior learning experience and online self-regulated learning may depends on the topic and learning level of prior online learning experience. R. F. Kizilcec et al. found that "the level of online self-regulation learning was not high for students who had only taken online courses, but was higher for those who had completed a full online course, and was higher for students who had previously taken online courses with topics similar to their current online courses" [Kizilcec et al. 2017].

The findings of our study indicate that students with better family background are better at using online self-regulated learning strategies. In terms of family background, parental education and occupation may represent the cultural and economic capital of the family. In online learning, cultural capital may be transmitted to online self-regulated learning through students' good habits formed over a long period of time by family upbringing and parental involvement in their education. For example, students with better family backgrounds will use their Consultative Advantage to seek more help from teachers or other peers when they encounter technical problems in learning, and seeking help is one of the core strategies of online self-regulated learning.

Measures for teachers and students to adapt to the information environment

Teachers and students need to develop the habit of teaching and learning in a smart environment. From the perspective of the human-technology-world ecological relationship, technology has transformed our experience of the world, and in turn, we have also been transformed during this process. Just as people design smart phones, smart phones attract users to use a certain software for a long time through various APPs, so that they form a certain habit, thus shaping users' thoughts, feelings and behaviors.

They also need to change the way of practice. The basic questions that teachers need to answer while implementing smart education in the age of intelligence include not only 'What should I do?' in the individual sense, but also 'What should we do?' involving the community formed by teachers, as well as the designers, manufacturers, decision makers of intelligent things, and even the intelligences themselves. For example, in the process of online teaching, when teachers decide whether to fully monitor students' learning process, the information collection technology of big data will actually play the role of a 'participant' in teachers' decision-making.

Teachers and students should embrace technology along with the new culture it brings - openness and integration. The use of a technical object by human beings is not only the acceptance of an artificial object, but also the acceptance of a technical culture, that leads to forming a new cultural

relationship between human beings and technology, and vice versa. It is only when people are familiar with a technological culture that they will accept and use technological objects to a greater degree. The 'here' culture mainly refers to the culture presented or brought by the development of technology. Only when people survive in this technology culture can they gradually integrate the external cultural connotation into their individuals. With the development of virtual learning space, the technical means make the physical boundary more and more blurred, and the open education environment is formed. Only by adapting to this new culture with open and integrated attributes as soon as possible can teachers and students adapt to the development of society.

Teachers need to change their way of thinking and form an educational understanding of technology. It requires teachers to at least know what aspects of student learning are being addressed by the technology being used, what part of the learning process is being addressed, what they can do in the context of technology-integrated teaching activities, what kind of technical behavior is appropriate, and so on. Therefore, the relationship between teachers and technology is no longer just a 'purpose - means' or 'manipulator - tool', but a good and positive relationship is constructed in the process of making it appropriate for students' learning, with reference to the realization of educational meaning, i.e., the depth and effectiveness of students' learning in the classroom and the lasting development of their literacy.

Teachers should move from the mode of more requirements to the one of more care for technology. As William Glasser points out, "We are all social creatures and we all need the support and care of others" [Glaser 2011: 82]. Specifically, when technology cannot meet your own teaching needs, or even when you have a negative tendency to reject or abandon technology, you should, on the one hand, examine the true appropriateness of technology from the perspective of your own technical education and teaching ability, and on the other hand, provide more understanding and support to educational technology and its producers, believing that they can gradually become indispensable 'partners' for your own teaching practice.

Conclusion

Technology has had a profound impact on the structure of human life, learning space, and behavior. At present, a large number of technical artifacts exist in the field of education, such as multimedia projection, smart classrooms, etc. At the same time, new educational models such as flipped classroom and smart classroom are constantly enriching the educational field, and they are constantly constructing new educational forms as new 'materials'. The development of each new generation of information technologies, such as

computers, broadband, smart phones, tablets, and college MOOCs, is affecting the teaching and learning of teachers and students in the educational context. Information technology makes knowledge change in terms of representation form, storage mode, transmission carrier, main type and transmission mode. New learning models have emerged along with the new form of networked knowledge, such as Connectivist learning.

The influence of contemporary information technology on education is holistic and comprehensive. It has changed the behavior, practice and thinking mode of teachers and students, and as a consequence their way of life. Through investigation and research, we found that, first, Chinese teachers' understanding of information technology is still at a lower level of cognitive stage. Therefore, teachers should actively change their educational concepts and ways of thinking and accept the new culture brought by technology. Second, there is still much room for improvement in teachers' ability to use information-based education tools creatively. The current Internet technology platform has created opportunities for teachers and students to communicate through time, space and context, thus giving them greater freedom and the greater challenge of facing independent choices. In this way, it also constitutes a new pressure on the subject, requiring them to have higher reflection, criticism and autonomy. Teachers need to integrate resources and explore new teaching and learning models to promote human development. Third, the overall level of students' self-regulated learning ability is low and there are significant differences between students of urban and rural areas. Students with better family background are better at using online self-regulated learning strategies. In online learning, cultural capital may be transmitted to online self-regulated learning through the good habitus formed by family upbringing and parents' educational participation.

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***Сунь Вей*. Інформаційні технології в освіті сучасного Китаю: реальність і можливості**

Зі стрімким розвитком сучасних інформаційних технологій прискорюється їх інтеграція в усі сфери освіти, що сприяє проникненню інновацій в освітній простір. Авторка підкреслює, що розробка багатьох освітніх технологій була орієнтована на цілі навчання і включала достатню кількість освітніх понять і елементів. Проте, якщо вчителі сліпо дотримуються традиційної концепції «технологія – це лише інструмент», то це створює відчуття вищості власного статусу та вузьке розуміння цінності технологій.

У своїх дослідженнях авторка спирається на новітні досягнення в галузі не тільки високих технологій, які використовуються в освіті, а й на психологічні та соціальні дослідження щодо впливу останніх як на освіту, так і на людину. Авторка пропонує сприймати технології в контексті нової культури, показує можливі шляхи їх більш адекватного використання. Робота зі штучними технологічними об'єктами – це не тільки прийняття штучного об'єкта, а й прийняття технічної культури, яка вказує на нові культурні відносини між людьми та технологією, і навпаки. На основі аналізу явища та сутності сучасних інформаційних технологій авторка статті шляхом анкетного опитування намагається з'ясувати проблеми, які існують у застосуванні сучасних інформаційних технологій в освіті, розмірковує про вплив технологій на педагогів і педагогів. учнів у системі освіти.

Відповіді учасників опитування дали змогу скласти картину використання інформаційних технологій в освіті як цілісного та комплексного процесу. Аналіз отриманих результатів, а також повсякденне практичне навчання навикам використання високих технологій дозволили авторці встановити, що вплив інформаційних технологій на освіту є комплексним, це новий етап у розвитку освіти в цілому, що дозволяє охарактеризувати процес їх використання як цілісну систему. Вплив технологій повністю змінив усі структури та всіх учасників освіти. Результати опитування також дозволили виявити низку проблем, які свідчать про недоліки сучасного освітнього простору, про дидактичність навчання в сенсі передачі та сприйняття інформації в нових умовах (мова йде не тільки про цифровізацію як процес, а й про зміни, спрямовані на трансформацію методології навчання).

***Ключові слова**: освіта, високі технології, «розумний клас», «перевернутий клас», базові потреби в інформаційних технологіях, інтеграція інформаційних технологій в освіту, адаптація до інформаційного середовища.*

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