Analyzing the Challenges Facing the School Curriculum in the Context of the Information Society

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Abstract   The impact of information technology (IT) on society is broad and profound, and people living in the information society need to be lifelong learners and constantly adapt to cope with the rapidly changing present and future. The education system in every country faces challenges and problems in developing and implementing the curriculum. There is a general consensus that the curriculum is the central vehicle of schooling, but consensus does not mean that curriculum development has become a real driving force in school development. Curriculum tends to lag behind social change and is relatively closed and conservative, so the school curriculum in the context of the information society is facing a great challenge of change. In the information society, the new media represented by the Internet is shaping a new social culture with its own logic, and cultural monopoly and authority are further subverted and dissolved. Some scholars have pointed out that the change of cultural communication media from oral to written to electronic and then to data is a process in which cultural resources are constantly shared and cultural democracy is constantly expanded. The impact of information technology on society is broad and profound, and individuals living in the information society need to become lifelong learners, constantly adapting to cope with a rapidly changing present and future. Education systems in every country face challenges and problems in developing and implementing curricula.

Reflections on the challenges facing school curricula in the context of the information society

Curriculum not adapted to the pace of knowledge change in the information society

Learning knowledge is at the heart of the school curriculum and schools are seen as one of the main places to acquire knowledge. With the continuous development of social information, the form of knowledge production has changed, and the publication of social knowledge has led to an accelerated pace of knowledge production. This creates an objective contradiction with the limited content capacity of traditional school curricula, weakening the knowledge transfer function of the curricula. Traditional school curricula are developed in a linear and uniform manner, with a top-down closed structure of curricular resources and practical activities, resulting in the knowledge of school curricula not being able to keep up with the rate of updating of social knowledge, appearing old and outdated, and being out of touch with social reality. This closed structure often leads to a situation in which the content of the curriculum fails to keep up with changes in social knowledge, resulting in a situation in which the knowledge is outdated and out of touch with the current situation in society. In addition, in the new knowledge structure of the information society, there exists a large amount of practical and contextualized knowledge based on the tasks of social production and life, and with the continuous emergence of sub-disciplines, it is difficult for the school curriculum structure based on the traditional classification of disciplines to categorize and arrange this new knowledge into the daily teaching of the curriculum.

The way the curriculum imparts knowledge cannot meet the current needs of students to adapt to employment and life in the information society. Knowledge is a way of being, a way of caring about the world, a way of relating to the world he or she lives in as a person in a given society, and a way of engaging with, caring about, sharing, talking about, and dealing with the world as an individual or a group (Li, 2009). Bell (1984) states that "post-industrial societies are knowledge-centred societies, where the accumulation and dissemination of knowledge is the direct engine of socio-economic development, and where workers who have acquired specialist knowledge will be the holders of rights in post-industrial societies". Driven by information technology, everyone has to learn knowledge continuously, and the automation of knowledge will become the next trend of information technology. However, the content of school curricula is still set on repetitive and general theoretical knowledge, which mostly remains on the surface of mechanical memorization, and lacks the cultivation of practical exploration and innovation ability.

The organizational hierarchy of the curriculum hinders the efficiency of information transfer

While we focus on the new and historical discontinuities of the information society, we must not lose sight of the continuity with industrial societies of the past. The impact of information technology on social systems has lagged behind science, business and industry because of the varying degrees to which societies have been affected by information technology.

The modern school curriculum system was formed during the period of industrialization and, like many factories and commercial organizations of the same period, has a hierarchical structure and functional organization that has resulted in stricter regulations and standards. Regulations are used to promote the achievement of curriculum standards and objectives through a rational organizational logic of design at the top, management at the middle, implementation at the bottom, and progression through the levels. Under this philosophy, curriculum documents are orders from above, schools are institutional organizations carrying out administrative instructions from above, teachers are the implementer of specific curriculum programme, and students become passive recipients of

curriculum content for the purpose of examinations. The links between school administrators and teachers, teachers and students, and curriculum and teaching are severed by the division of organizational hierarchies, gradually creating a one-sided relationship between the giver and the receiver.

In a highly centralized administrative structure, the process of information transfer within the organization is lengthy, and each unit and individual reinterprets the information according to their own interests, and there is a serious information asymmetry from the upper to the lower levels of the organization (Zhou, 2003). Traditional schools still do not have a good grasp of the connotation of "developing information technology and promoting school modernization", and regard the purchase of advanced equipment, the best teaching software or digital teaching materials as the most important means to promote the construction of information technology. The misunderstanding of "building more, using less, and using less deeply" has led many schools to take the lead in technological equipment, but it is difficult to promote deeper changes in teaching and learning. Curriculum knowledge is also inevitably affected in the process of dissemination and transformation, and deviations in knowledge interface lead to weakened and ineffective acceptance of curriculum knowledge.

Curriculum standards are not compatible with the current level of information technology development

With the development of information technology, artificial intelligence and big data have penetrated into every aspect of people's lives, and various electronic products, software and network platforms provide more convenience for people's lives and learning. In China, although the 2011 version of the syllabus is also dedicated to the development and use of information technology, but in the modern society of rapid technological development, the original understanding and requirements have been far behind the times, and can not meet the current needs of mathematics teaching. Students in compulsory education nowadays are "network natives" born in the 21st century, and they have been accepting, adapting to and embracing the network and the vast amount of information from the moment they were born. Therefore, new teaching techniques and the new characteristics of the student body will put new demands on traditional teaching content and teaching methods.

The information society has formed a new knowledge structure, most of its new knowledge comes from the practical and contextual knowledge of social production and life, and the branches of disciplines have become more refined, so that the traditional classification of the curriculum can no longer meet the needs of the application of new knowledge, but it is very difficult to weave these new contents into the daily teaching of the curriculum. The curriculum in the context of information technology is subverting the traditional learning process, so that the transmission of knowledge is shifted forward from the classroom to before the class, and is realised through students' personalised on-line learning; while in the classroom, part of the function of internalising knowledge is realised through teachers' guidance of students' enquiry, reflection, correction of errors and cooperation.

The intervention of media technology increases the difficulty of selecting and controlling the quality of the curriculum

School is an important place for social and cultural transmission and innovation, and the curriculum is an important means of social and cultural transmission. The development of information technology has brought new communication media to the curriculum, and students use the new communication media to learn the curriculum, resulting in the emergence of new media-specific curriculum forms. The use of media technology has enriched the teaching content, but it is worth

noting that the new media itself is naturally pluralistic and open, and while breaking down cultural boundaries and restrictions, it also tends to affect the standard of course content. It becomes a difficult task to screen whether the curriculum content is in line with the excellent traditional culture in social life.

The dissemination and sharing of the curriculum through the medium of information technology also means that the school curriculum has entered into a mediated existence. The curriculum, like other cultural contents in the medium, has to compete for the limited attention and time of the audience, and has to adopt richer forms and more vibrant contents to attract students. This may result in students' cognitive activities remaining at a superficial and complex level and missing important opportunities for deeper thinking. Media technology is not intended to enhance the 'presence' of technology in the curriculum. Learning effectiveness depends on attention span, and attention is also difficult to sustain. In global epidemics, for example, the stop-and-start online delivery of lessons has revealed the problematic presence of the inertial solidification of curricula in all types of pedagogical practices. Online live broadcasting became the choice of most teachers during the epidemic, but they often directly copy the offline classroom mode, and it is difficult to carry out group discussions and other activities that can be organised offline, making teaching "online electric irrigation", and the teaching effect may be difficult to even meet the standard of teaching to the test. In the traditional curriculum, students can ask each other if they don't understand key information, but focusing on new media courses, teachers and students may not be able to immediately notice whether they have mastered key knowledge points. Once course content that needs to be reinforced is distracted or weakened, unfocused technologies and their expressive power dominate the classroom (Zhao, 2013). Under the double pressure of multiculturalism and competition for attention, the quality of the curriculum will become increasingly difficult to control.

Cases from China and abroad

China

Technology platforms can be applied to provide powerful tools for problem-solving in the teaching of mathematics in first-tier Chinese cities, for example; visualizing mathematical concepts or graphs facilitates contextualization and helps reduce the cost of inquiry and trial and error, thus allowing students to experience the process of mathematical discovery with a modern twist. The advantage is that developments in science, technology, and ICT have made teaching and learning, which is focused on developing students' abilities and literacy, easier to use and more up-to-date. However, research into the implementation of the curriculum standards revealed that teachers generally felt that the requirements for curriculum development were relatively homogeneous and outdated and did not meet the needs of learning and teaching. In addition, regional economic differences, uneven educational development, and uneven coverage of teacher training have led to limitations in some teachers' understanding of IT, which is limited to the use of computers.

Overseas

It is precisely because the information society demands a reconfiguration and cognition of the future curriculum and teaching theory that countries and educational organizations around the world have started a new round of curriculum reform and practical exploration. For example, on July 19, 2011, the United States released "A Framework for K12 Science Education: Practices, Interdisciplinary Concepts, and Core Concepts", which further builds an interdisciplinary science education system at the national level and forms a project-based learning curriculum system based on science,

technology, engineering, and mathematics (Zhang, 2012). In addition, many countries, regions, and international organizations around the world have successively introduced core literacy systems for student development, which directly point to the reconfiguration of the curriculum and the transformation of teaching and learning approaches and assessment methods.

Coping Strategies for School Curriculum in the Information Society

In order to adapt to the information society environment, school organizations also need to interact with the environment through the organization, which is essentially a process of knowledge output, organizational transformation and cultural generation. If the traditional school is regarded as an open organizational system in the information society environment, nurturing people is the core function of the organizational system, and curriculum and teaching are the main behaviors to realize the functions of the school. The social environment of information technology also enables school organizations to generate the characteristics required by the information society in the process of change and adaptation, and school organizations have an important development mechanism similar to that of the information society because of their core function of fostering citizens adapted to the requirements of the information society. The school curriculum, as the core act of realizing the nurturing function of school education, needs to maintain sufficient socialite and openness in the acquisition, processing and organizational construction of information in order to respond positively to the challenges of the changing environment of the information society.

Socialization of School Curriculum Resources - Responding to the Need for Paradigm Change in Knowledge Production

Firstly, to promote the diversification of the main body of school curriculum development. The development of the information society has transformed the original knowledge production paradigm, and the form of knowledge production has changed from "expert-institutional" to "public-interactive", which makes the producers of social knowledge more and more diversified. This makes the producers of social knowledge more and more diversified, and the supply channels of social knowledge more and more diverse. Enterprises, public institutions, scientific research institutes or other social groups or even individuals are producers of social knowledge in different fields. Integrating multiple social subjects, combining curriculum development and setting with the curriculum needs of the state, schools, teachers and students, and integrating the corresponding curriculum resources, which is in line with the characteristics of the publication of knowledge production, can also integrate the latest knowledge and insights in various fields into the school curriculum, and help the knowledge of the school curriculum to get out of the old and closed shackles, and help the school curriculum to be more open, and to be more open and interactive. It can also integrate the latest knowledge and insights from various fields into the school curriculum, help the knowledge of the school curriculum get out of the shackles of the old and closed, and realize the continuous updating of the knowledge of the school curriculum. At the same time, the active negotiation and mutual adjustment between multiple curriculum development bodies are also conducive to the production of knowledge in a more practical way, helping students to better complete the transition from classroom accumulation to future employment applications.

Secondly, the construction of participatory curriculum knowledge transfer. The socialization of curriculum resources requires that teachers and students, as the main body of the curriculum, become participants in the teaching of the curriculum. Teachers should change the traditional indoctrination teaching methods, and actively guide students to complete the questioning and exploration of the

relevant issues; students enjoy full autonomy, and are able to choose the appropriate curriculum resources for in-depth learning according to their own interests and practical needs. The purpose of in-depth learning is not only to acquire knowledge, but also to build a personalized knowledge system for students, which they can ultimately use to support their own practice. In this way, the external, static knowledge transmitted in the school curriculum can be transformed into dynamic resources that can be used to create knowledge for personal practice.

Finally, the knowledge leadership of the curriculum for social development is released. Through the socialization of curriculum resources, the school becomes a place for multiple social forces to collectively participate in knowledge innovation and creation. The sharing of school curriculum resources not only provides lifelong learning resources for the majority of students and ensures their right to enjoy the knowledge of the main body of the curriculum, but also makes a variety of social knowledge to the school curriculum as the base point of convergence, and becomes an important position for innovation of talent, knowledge innovation and practical innovation. Through the pooling and interaction of information, school curricula are able to perceive social change and development more keenly, and to achieve knowledge leadership in social development in the form of cultivating innovative talents.

Building Excellence in School Curriculum - Responding to the Challenges of Socio-Cultural Magnification

The construction of curriculum excellence requires multiple subjects of curriculum practice to perform their respective roles in an effort to achieve excellence in the school curriculum. At the national level, a curriculum platform should be established to facilitate the sharing of national school education resources, and through the design and planning of the platform, a mechanism should be established to assess the quality of the curriculum as a whole. On the one hand, it should control the introduction of social curriculum resources, and on the other hand, it should provide guidance and advice on the construction of high-quality school curricula, and promote exchanges and cooperation between school curricula and the community.

The school is an important main body to achieve communication between internal and external curriculum resources, internally activate the momentum of the construction of school curriculum resources of excellence, externally strengthen the communication with the community at all levels of institutions and individuals, to achieve internal and external resources and information interoperability and mutual assistance. Teachers are the implements of school curriculum teaching, not only to actively use all kinds of curriculum resources in the process of teaching, and flexibly guide students to learn and develop through the curriculum; they also need to give timely feedback at the end of the course, evaluate the implementation of the curriculum, the use of curriculum resources and the effect of the course, and provide practical models and improvement data for the construction of curriculum excellence. Students are both learners and creators of school curriculum, the information-based learning environment and open access to curriculum resources make students' learning full of personification and autonomy; under the curriculum environment, students can carry out unique self-realization process according to their different characteristics; while enjoying the curriculum, students are also important providers of curriculum resources, and what's more important is that, through their evaluation and feedback on the curriculum, the curriculum gains the ability to become a high-quality product. More importantly, through their evaluation and feedback on the course, the course gains the possibility of becoming a masterpiece.

Conclusion

In conclusion, the information society, which is full of uncertainty, complexity, diversity, interaction, and openness, is becoming a living environment that all countries must face and is changing individuals, especially young people, in a subtle way through daily work and life practices. This shows that the development of information technology has greatly changed the way of life of human society, as well as the objectives and the way the curriculum is constructed. In the face of the challenges of the information age and the training of future talent, curriculum development needs to take a serious look at these social influences. To meet the needs of society, adapt to changes, and respond to new challenges, curriculum development in all countries needs to grasp the convenience and opportunities brought about by information technology to realize the process of modernization and transformation, and informational development.

References

1. Bell, D. (1984). *The advent of post-industrial society: An exploration of social forecasting*). Beijing: The Commercial Press.
2. Li, Z. C. (2009). *Theory of curriculum knowledge*). Shanghai: East China Normal University Press.
3. Zhang, Y. Z. (2012). A new framework for K12 science education in the United States through the frontier picture of science education reform in the United States. *Comparative Education Research,* (3), 72-76.
4. Zhao, J. (2013). Will the increase in the number of media bring about an increase in the quality of the curriculum Reflections on the change of curriculum form. *Curriculum, Teaching Materials and Methodology, 33*(8), 30-35.
5. Zhou, X. G. (2003). *Ten lectures on the sociology of organization*). Beijing: Social Science Literature Press.