

A Study on the Future Oriented Higher Education Reform in China

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Abstract: Higher education in China have gone through great changes in the digital era. The pace of education reform seems to lay behind the economical and social demands for for the high quality talents. Under this background, this paper explores the future-oriented higher education reform, covering the following aspects: to build a future-oriented learning approach driven by deep active learning; to transfer the core of higher education from Teaching to Learning; to change the teaching methodologies in the digital age. Driven by the goal of cultivating learners' higher-order thinking ability and problem-solving ability, the most important aim is to effectively integrate shallow learning and deep learning, enhance learners' deep active learning ability, maximize learning effectiveness, and enhance learning driving force.

Keywords: higher education; future oriented; deep active learning; new directions

1. Introduction

To innovate educational concepts so as to empower future education is of great significance. In recent years, the idea "education for sustainable development" is attached great importance to. And "The call for a kind of education which can contribute to a sustainable future has resulted in the 'education for sustainable development' (ESD) campaign "[1]. While future education is drawn more and more attention, the concept "Future-conscious higher education" is proposed. To be specific, "Future-conscious higher education research should try to identify thematic areas not frequently discussed at present but likely to be major issues in the future"[2].

With the further enhancement of higher education reform, the idea "Thinking education as more than training" is widely accepted[1]. It is believed that "Moral education is a hope for the future"[3]. In recent years, moral education is give priority in China's higher education. The moral quality of a talent is even put in the first place for higher education. Sponsored by The European Science Foundation (ESF), the project "Higher Education Beyond 2010: resolving conflicting economic and social expectations" centers on the future of higher education and its research[4]. Leadership becomes the core issue for the future of higher education[5]. A study evaluates the current state of Deep Learning and draws a conclusion about its key limitations in application.

Empowered by digital technology, it is necessary to create a diverse and interactive future education space. By effectively utilizing emerging technologies such as artificial intelligence and virtual reality (VR) to integrate and reconstruct a diverse educational space with deep interaction between physical space, virtual space, and intelligent space is of key importance for empowering higher education.

The core concept of future education lies in lifelong education and lifelong learning. To put it simply, it's never too old to learn. The, how to make lifelong learning cover the entire society in terms of scope and breadth, and the entire process of individual education in terms of vertical depth, is the key to understanding and implementing future oriented higher education. However, it was not until recent years that the concept of lifelong education truly spread throughout China. However, what is the essence and core connotation of lifelong education? Why is lifelong education necessary? How to implement lifelong education? How do educational institutions at all levels implement lifelong education or integrate lifelong education with school education? What is the relationship between higher education and lifelong education? All these questions need to be answered.

It is necessary to make clear the relationship between future education and lifelong education. As to the relationship between education and future, it was stated that "Education and the future are inseparably intertwined."It is impossible to think about educational matters without "making references

to the future." In this context, "an open future for education in the context of sustainability" is elaborated.[1]" Meanwhile, it is urgent to make clear distinctions between life long learning, lifelong education and future education. In our opinion, lifelong learning is the core of lifelong education, and lifelong education is the core connotation of future education. The key and foothold of future education implementation is to enhance learners' lifelong learning ability. The key elements of lifelong learning include helping learners "learn to learn" and "learn to survive in the ever changing society", while developing their learning habits, learning strategies, and learning ability. To be specific, the educational philosophy behind future education is to foster learners life long learning consciousness and competence. The relationship between future education, current education, and traditional education is inheritance, development, and innovation, in stead of a binary opposition.

2. Art of State

2.1 Future education

On November 10, 2021, the United Nations Educational, Scientific and Cultural Organization (UNESCO) released a global report titled "Co imagining Our Future: A New Social Contract for Education", calling on all countries to jointly explore and envision education for the future and even 2050. The report proposes three basic education questions: When we look forward to 2050, what should we continue to do? What should we abandon? What should we innovate The State Council's "China Education Modernization 2035" issued in 2019 proposed the medium and long-term strategic planning goals for China's education development, which are to achieve overall modernization of education, step into the ranks of an education powerhouse, promote China to become a learning powerhouse, a human resource powerhouse, and a talent powerhouse, and lay a solid foundation for building a prosperous, democratic, civilized, harmonious, and beautiful socialist modernization powerhouse by the middle of this century.

Ally (2019) discussed the issue of competency Profile related to the future education[6].Izak and Zawadz (2017) concentrated on the future of university education[7]. Some scholars explores the future education from the post-digital and post-internet perspectives[8]. The exploration of future education and schools in the digital era is gradually becoming a systematic project. A study has pointed out that "future education is an important concept in the field of education, teaching method, and teaching technology that occurs in the present and acts on the future. It is the use of advanced educational technology to cultivate 'future talents' that adapt to future social development[9]". The World Intellectual Property Organization (WIPO) released a report on "2019 Technology Trends: Artificial Intelligence", pointing out that large-scale personalized learning and innovative education are the development direction of future education, Cross disciplinary communication and cooperation are the ways to achieve future education[10]. Xu Mengying et al. (2020) conducted a dialogue and discussion on the essence, objectives, tasks, and development trends of future education [9]. Guan Chenghua et al. (2021) pointed out that "based on the era of intelligence and the core of education, five inspirations for studying future education can be formed, which are based on the development of the whole person, centered on active learning, focused on ability improvement, guided by high-quality supply, and guaranteed by optimized governance".

South Korea actively promotes the "Green Smart Future School" (referred to as the "Future School") and has proposed the concept of personalized learning space construction centered on student development, effectively integrating elements such as spatial innovation, green campus, smart classroom, and future curriculum. Scholars have pointed out that "in the future, schools will emphasize personalization and open sharing in their educational philosophy"[11].

2.2 Higher education reform in China

In the 21st century, higher education has gone through great changes, China with no exception. Higher education in China has mainly experienced the following three trends of . The first one is the reform of higher education as a whole, covering the allocation of the resources and emergence of ESP education in universities at different levels. The second is on the reform of teaching and learning methods in higher education. For example, emerging teaching and learning methods including flipped class flipped learning, blended learning, deep learning, interactive learning, and so on are introduced and applied in varieties of courses. While the third is the emergence of new teaching methodologies proposed in specific education contexts.

For example, the well-accepted and widely applied teaching methodology in higher education is the product-oriented approach (POA) proposed by Wen Qiufang from Beijing Foreign Studies University. POA aims to conquer the most striking shortcomings of existing higher education in China, that is too emphasis on teaching and neglecting the application in real societal context [12]. POA has been applied in courses both for English majors and non-English majors, especially for ESP learners. Since POA was first proposed in 2008, several rounds of pilot experiments have been conducted in reading, writing, as well as interpreting courses of foreign language teaching [12].

Since emerging learning and teaching methods are not strange to foreign language teachers, online teaching was conducted quite smoothly. While new problems occur at the same time. The most striking one is how to guarantee the students' engagement and participation in online classes, and further guarantee their learning outcome, learning efficacy, and learning effect. Together with this question in mind, tangle the relationship between online learning and offline learning when regular classroom teaching is of great importance and should be put back on the right track. With all of the above questions in consideration, it is necessary to reexamine and reflect on foreign language in higher education reform and to further predict the possible directions for future reform. Hopefully, the reflection and insight on higher education could be helpful for the present and future reform of higher education in other countries worldwide.

With the development of artificial intelligence, the concept of deep learning has regained attention. Research has pointed out that according to Bruner, learning includes two types, namely deep learning and surface learning. The former focuses on low-level thinking abilities such as memorization, understanding, and application, while the latter emphasizes high-level thinking abilities such as analysis, evaluation, and innovation [13]. In fact, the concept of deep learning was initially formally proposed by Marton and Säljö [14]. Deep active learning emphasizes that students interact with others and the world, applying current and past knowledge to their future lives[15]. In other words, deep active learning emphasizes conducting a large number of productive learning activities through active learning, emphasizing the connection between new and old knowledge, knowledge application, and problem solving, with the aim of achieving deep learning goals through active learning. In the digital era, there have been significant changes in education methods, teaching and learning methods. The learning style of students will shift from a single and passive learning style to a diversified new learning style. Artificial intelligence has become an inevitable trend in promoting educational transformation. Understanding the development trend of artificial intelligence and the degree of integration between education and artificial intelligence is the primary task for this transformation[10]. In this context, what kind of people should future education cultivate? How to cultivate people? Who will cultivate people (teachers, schools)? What educational theories are needed for future education? How should future education be taught? How to learn? These are all urgent questions that need to be answered in future education in the digital era.

In the digital age, online teaching is widely adopted in varieties of courses in higher education. Off-line teaching and face-to-face communication in class are partially moved to the online virtual one. When teachers and learners are exposed equally to the almost same information and knowledge online, what are the most that students need to grasp in knowledge, skill, and competence and what are the most that the contemporary society needs the learners to grasp? Meanwhile, what is the core element to guarantee learners' participation and engagement in learning? These questions have become the most urgent ones to answer.

The traditional way of pure transmission of knowledge has shown its inefficiency in arousing learners' interest and impulse in learning, especially for online learning. To make up for the disadvantage of one-way transmission of knowledge, emerging ways of teaching, such as flipped class, blended learning, as well as deep active learning, etc., have been proposed and advocated by scholars from all over the world, among which blended learning is widely studied and adopted in tertiary education. Meanwhile, blended learning as an effective way of learning in combining the strong points of online and offline learning has been widely studied and applied to foreign language teaching, and the learning environment of blended learning was well examined [16].

While there is still no persuasive proof for its efficiency in conquering or avoiding the disadvantages of online and offline learning. Some research findings show the disadvantages of online learning with MOOCs as an example, including the low rate of attendance, low participation, and insufficient engagement in active learning, as well as lack of effective evaluation, etc.. Most of the studies focus on how to monitor learners' learning efficacy from the outsiders' perspective, while less attention has been put on learners' autonomous learning and the significance of learners' autonomous reflective evaluation.

As online learning is widely carried out worldwide, learners as the key element who play a decisive role on the efficacy and efficiency of online learning are in want of further study. At the same time, the relations between online teaching and learning need reevaluation and reexamination. Some key issues need reassessment and reconsideration, such as what should be taught and learned, what is taught, and what is finally learned. Those three questions are closely related to the three learning objects proposed by Marton (2018), including the intended object, enacted object, and lived object[17].

In the era of globalization, foreign language learning is more than language skill training. Competence in cross-cultural communication and problem-solving is becoming more and more important for learners. While cross-cultural communication, cultural differences as well as cultural clash must be handled properly. Dialogue should be valued more than monologue in cross-cultural communication. While how to foster foreign language learners' international viewpoints and global perspectives is of vital importance for higher education both in China and in the rest of the world. Overall speaking, in foreign language teaching, some key issues must be paid attention to, such as the role of foreign language learning, the suitable teaching methods of addressing students in the digital era, and the core competence that learners need to foster.

3. Future Oriented Higher Education in China

3.1 To build a future-oriented learning approach driven by deep active learning

Deep Active Learning (DAL) is applied in efficient training[18]. Chang, Vembu, Mohan, Uppaal, & McCallum (2020) states that "Existing deep active learning algorithms achieve impressive sampling efficiency on natural language processing tasks "[19].

Driven by the goal of cultivating deep active learning ability, we aim to construct a future learning approach. Drawing on the theory of deep active learning, we will develop a blended teaching model that integrates online and offline deeply, and seamlessly connects classroom and extracurricular activities. Adhering to learner-centered learning approaches, we aim to promote learning through teaching, ultimately achieving deep interaction and integration between learning and teaching. Ultimately, we aim to enhance learners' deep and proactive learning abilities, so as to truly achieve the deep interaction and integration between teaching and learning, as well as deep mutual promotion between professional ability cultivation and sustainable career development.

Since the concept of deep learning and surface learning was formally proposed by Marton F. and R. Säljö [14], deep learning has been piloted in varieties of courses worldwide [20]. By adopting the user-centered design principles, deep learning aims at creating new content and knowing the target learners and designing accordingly based on their needs and personalization of learning to help learners acquire knowledge, process information and deploy learning best suited to them [21].

Since the first decade of the twenty-first century, active learning was proposed and widely adopted and studied in Japan[15]. While according to Mizokami, active learning started to be gradually accepted by university teachers and was adopted to encourage the students to actively engage in classes[17]. In the past decade, relevant studies centered on the theorization, and application of active learning.

In definition, active learning is viewed as "a general term for teaching and learning methods that incorporate students' active participation in learning. In actual practice, active learning is often confined to the level of instructional formats that integrate group work, discussions, and presentations"[15]. Writing, discussion, presentation, etc. are specific examples of active learning, denoting the paradigm shift from teaching to learning at the activity level [17]. Besides, active learning places special attention on adequate interaction between activities and externalizing cognitive processes to the outside world[17]. Active learning emphasizes the output tasks and active production.

To be specific, active learning includes all kinds of learning beyond the mere one-way transmission of knowledge in lecture-style classes (= passive learning). It requires engagement in activities (writing, discussion, and presentation) and externalizing cognitive processes in the activities [17]. That is to say, active learning stressed the interaction of what is learned in class and what is needed in the real world. From this point of view, active learning aims to combine the internalization and externalization of knowledge, to realize the aim of learning for use and learning to use. In other words, learning for use and learning for application is the key to active learning.

To carry out and enhance the quality of AL-based instruction, Mori (2018) put forward six practical

trends: (1) assessing learning hours outside the class, (2) backward design, (3) curriculum development, (4) multiple classes per week, (5) building an environment for active learning, and (6) flipped classroom[22]. It can be seen that curriculum design and development are the core of AL-based class, while flipped class offers a flexible teaching mode for enhancing active learning, which is confirmed by Mori[22]. In his statement, the flipped classroom is one of the most efficient forms for effectively realizing and deepening active learning activities.

Active learning is effective in enhancing learners' engagement and participation in learning by conducting varieties of tasks in class, while the learning depth is not satisfactory. To make up for the inefficiency of active learning in fostering learners' competence in deeper learning, Matsushita(2018) formally proposed the concept of deep active learning, and defined it as "learning that engages students with the world as an object of learning while interacting with others, and helps the students connect what they are learning with their previous knowledge and experiences as well as their future lives" [15].

As to the common grounds and differences among active learning, deep learning, and deep active learning. Matsushita (2018) holds that "active learning focuses on the formats for learning, and deep learning focuses on the quality and content of learning[15]. Deep active learning refers to learning that engages students with the world as an object of learning while interacting with others, and helps the students connect what they are learning with their previous knowledge and experiences as well as their future lives." In conclusion, deep active learning is efficient in facilitating learners' competence in real-world practice by externalizing the previously internalized knowledge[22]. explored internalization and externalization respectively and pointed out that the former referred to understanding and acquiring knowledge while the latter referred to the application of knowledge.

3.2 Transfer of higher education from Teaching to Learning

In the past decades, higher education reform has roughly gone through several runs of paradigm transfer. The overall transfer is featured by transferring the teaching paradigm from teaching-centered to learning-centered instruction. While in the respect of education agents, it has transferred from teacher-centered to learner-centered instruction. While from the perspective of learning, the instruction focus has gradually transferred from teaching to learning and then to application and problem-solving.

In the past few years, the flipped class has drawn much attention in higher education, including in higher education. According to Mori (2018), the flipped classroom is "not merely a new instructional format in which classroom instruction and self-instruction at home are reversed; it would seem correct to position it as one of the initiatives to transform the paradigm from instruction to learning"[22]. The connection between flipped classes and paradigm transfer of education from teaching to learning was recognized. This insight is a coincidence with Chinese scholars.

Mori (2018) took the flipped classroom as a kind of active learning course design to enhance learners' deeper understanding and training in multiple competencies by combining autonomous learning and mutual interaction[22]. Some findings showed the efficiency of flipped classes in facilitating students' deep learning.

Overall, education reform experienced the transfer from teacher-centered to learner-centered, from teaching to learning, while specifically speaking, from passive learning to active learning and then to deep active learning. While knowledge transmission is still valued, autonomous learning and deep learning competence seem to be more adequate for learners in the digital era. As the information is available to everyone, including both teachers and learners, the key is not how much information are people exposed to, but how to search for, recognize and organize information for their real-life use. In this situation, deep learning is more valued than surface learning, while deep active learning seems more significant than the previous two since the last one combines both active and deep learning.

3.3 Transfer of teaching methodologies in the digital age

In the past decade, emerging teaching and learning paradigms occurred in an unprecedented way. For example, blended learning has featured the combination of face-to-face offline learning and virtual online learning, to successfully break through the spatiotemporal limitations of traditional teaching and learning. Flipped class not only conquered the limitation of teaching sequences and bridge the gap before, in, and after class, to realize the transition of knowledge learning, acquisition, internalization, and externalization, and finally put what is learned into use and application in the real life or societal

context.

Facing the complicated learning environment, learners featured traits in the digital age, it is necessary to reflect and rethink teaching and learning paradigm in the specific setting of education which is featured by fragmentation of learning materials, time allocation, and so on, meanwhile, unidirectional knowledge transmission cannot meet the need of learners themselves and the whole society. In this kind of situation, the boundaries of teaching and learning, online and offline teaching and learning, and varieties of teaching methodologies are blurring more and more obvious.

As to classroom teaching, the power enhancement of learners is more valued, while in higher education, the power enhancement of teachers is becoming more focused. Both teachers and learners are becoming more powerful in deciding their favorite ways of what to teach and learn, how to, and what to teach and learn. That is to say, teaching and learning in the digital age are becoming more personalized and individualized.

In the contemporary world, digital learning, deep active learning, flipped class, and blended learning are frequently adopted and their advantages are little by little recognized. While at the same time teaching and learning platform, such as MOOCs, Moodle, Spoc, etc are applied to facilitate and help carry out the emerging ways of teaching, including flipped class, blended learning, and deep flipped learning[4].

The deep blending of teaching paradigms is becoming more and more dominant in higher education reform. DAL(Deep active learning) based instruction is effective in enhancing learners' learning motivation, learning efficacy, and learning result by blending the paradigms of activism, constructivism, as well as connectivism. For example, DAL-based instruction advocated engagement in activities such as writing, discussion, and presentation, as well as externalizing cognitive processes in the activities [15]. Since active learning is taken as an important way to learn and even taken as learning, and cooperation like the discussion is advocated by active learning, the combination of teaching paradigms of activism and constructivism can be recognized.

While the DAL aims to facilitate students' ability in connecting their previously acquired knowledge and experiences with their future lives[15]. To take learning as a kind of connection of learners' newly acquired and previous knowledge with the real societal needs and their real life is of great importance for the learners to solve real-life problems through learning, which is the key to connectivism.

Marton (2018)demonstrated the concept of the pedagogical paradigm and explored the object of learning in an enlightening way[17]. According to him, "learning is always the learning of something. This something, as we have seen, is the object of learning." While the object of learning brings together capabilities and content[17]. It is clear that the object of learning is situated at the center of learning, which not only concerns the content of learning, but also the competence that learners need to grasp.

The object of learning is divided into three kinds, which are the intended object (learning objective), enacted object (the space of learning), and lived object (outcome of learning) [17]. The intended object is the object that the teacher set for the learners to achieve in the course design at the very begging or before real teaching and learning takes place. The enacted object is the teaching and learning activities conducted by the teacher and learners in class which is the real teaching-learning event carried out in real classroom settings through the cooperation of the teacher and the students. The lived object of learning is what the learners have learned through participation in learning. Hereinafter, the three kinds of learning objects successfully connect the three phases of learning, that is before, during, and after class, at the same time, involves the teacher, teacher and learners, and learners themselves.

To explain the three kinds of learning objects more clearly, the concept will be unfolded as the following. If the intended object is the ideal object that the teacher set for the students, the enacted object is what is carried out, then the lived object is the learning reality. If the three types of learning objects are examined philosophically, the first one is what should be learned, the second one is how learning is taking place, and the third is what is learned in the end, which shows the flowing trend of learning from the ideal goal set in advance before learning takes place to the practice realized in the end, or from goal to reality.

While the object of learning as a whole is composed of the indirect and direct objects, which are the how and the what of learning[17]. The direct object of learning concerns the content of learning, while the indirect object concentrates on the way of learning.To be specific, according to Marton (2018), the intended object is what the teacher believes that learners should achieve after some time of learning,

the enacted object is what the teacher and learners do to realize the intended goal, while the lived object is the real learning outcome that the learner finally achieves through the interaction of teaching and learning[17]. Seen chronologically, those three learning objects are interconnected with each other, and the former influence or even decide the latter one after the other. While, taken from the perspective of the subject, the intended object emphasizes the teacher and teaching design, while the enacted object values the interaction of teachers and learners, while the lived object is not only the outcome of learners' learning but also the criterion to check the effect of teaching and learning.

4. Conclusion

By considering the changes in higher education in the 21st century, the paper analyzed the teaching paradigm's transfer from teaching to learning and then to the application of knowledge in the real world. Meanwhile, changes have occurred in the form and methodology of teaching. For example, in the past decade, blended learning flipped classes, deep active learning, and some other emerging ways of instruction have taken place in traditional ways of face-to-face teaching. In the digital age, online teaching became the dominant way of education at different levels almost all over the world. In this kind of situation, higher education reform needs new examination and new consideration. Therefore, the paper analyzed the teaching and education paradigms transfer in higher education, and further proposed a DAL-based instruction model to solve the current problem of separation between learning and application, teaching and learning, as well as surface learning and deep learning. The study aims at providing a new perspective for future oriented higher education reform in the context where online teaching has already evolved into a new normal in higher education.

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