Reflections on the Innovation of University Education and Technology under the Background of COVID-19 Epidemic

Gao Yajing

Adamson University, Philippines

──────────────────── **ABSTRACT** ────────────────────
A sudden outbreak at the end of 2019 caught us unawares and without time to deal with it, and all industries were hit hard and are still not completely gone, but the response of the education sector was the most timely and logical in the response to the New Coronavirus. This paper is an in-depth reflection on innovation in university education and technology in the context of the New Coronavirus epidemic. While illuminating the impact and influence of the New Coronavirus epidemic on universities, it also provides insight into the future of university education reform, thus helping universities to develop in the long run.

I. INTRODUCTION

The 2020 Newcastle Pneumonia epidemic has had a major impact on people's daily work, life, and studies, as well as on the development of various fields. Education and teaching in universities are also facing unprecedented challenges due to the impact of the epidemic. Innovation in education and educational technology is necessary to ensure that teaching schedules are not affected and that the quality of teaching does not deteriorate

The aim of this paper is to examine innovations to education and technology. Through this study, the current problems in educational innovation in higher education are analysed and corresponding solutions are proposed. It is hoped that these studies can be used to reform the traditional teaching system, so as to cultivate students' innovative spirit and creative abilities and create highly qualified, competent and well-rounded talents.

At a time when the new crown epidemic is spreading, explore how universities should break away from traditional teaching methods and techniques to create a reformative and innovative teaching model with new ideas, new technologies, new thinking and new behaviours.

II. LITERATURE REVIEW

In 2013, Fernando M. Reimers launched the Global Initiative for Educational Innovation, drawing on his experience of teaching at Harvard and advising on educational policy-making. The Global Initiative for Educational Innovation (GIEI) is a project that seeks to reflect the widest possible range of ideas about educational development and change in the world today, to ensure that educational change is deeply rooted in social reality, and to ensure that research perspectives are diverse. As Fernando M. Reimers (2020) says: "Conducting research in collaboration with colleagues from different countries, with different disciplinary backgrounds and work-life experiences provide us with a multidimensional perspective, opens up ideas and improves effectiveness." (p.81) The need for educational reform can be seen in this.

Wang Xia, Chen Yijun, Qin Ping and Zhang Liping(2020) all agree that to achieve innovation in quality education, it is necessary to reform the structure of the curriculum, as well as to innovate in teaching methods and approaches(p.16). First of all, a new system of teaching content has to be established. "Novelty" and "forward thinking" are the main characteristics of innovation. Teachers should change their traditional teaching methods, adopt flexible teaching methods, take the initiative to guide students to think, ask questions and study problems, and strengthen the interaction between teachers and students, so that the teacher's role shifts from "teaching" to "guiding".

According to Zhang Xu（2022）, the epidemic has made most universities realise the enormous role of Ip.279. In the wake of this epidemic, a deeper integration between IT and the disciplines is inevitable and its role will be maximised, thus bringing tangible benefits to students, as well as promoting a shift in teaching objectives from the transfer of knowledge to the creation of knowledge and a gradual shift from closed to openness. This leads to technological and educational innovation.

According to Li Fangrui（2019）, the main aspects of contemporary educational technology and innovative teaching methods in universities are as follows: (I) Reform traditional teaching methods and strengthen the combination of traditional teaching methods and multimedia teaching, so as to achieve the purpose of educational reform. (II) Giving full play to the orientation of modern technology and making full use of the advantages of interactive teaching to provide a good learning platform for students and to master knowledge through analysis. (III) Making full use of modern teaching technology in the classroom to bring students into a state of learning and to keep them motivated to learn. (IV) Improving teaching methods. Students are quick to accept new things in the course of their university education. Therefore, it is important to make full use of this psychological characteristic of students and to take appropriate measures to fully mobilise and explore their potential（p281）.

According to Li Xiaohui（2014）, innovation education is the key to nurturing a new generation of high-quality talent and a breeding ground for innovative talent. Although universities are not doing as well as they should in many areas, which has a significant negative impact on the cultivation of innovative talents(p.245).as the times develop and society progresses, innovation in universities will deepen with practice. Only through continuous educational reform can new mechanisms and conditions be created for the growth of innovative talents.

The above description illustrates the irreplaceable role of education and technological innovation in improving the quality of university teaching and learning, and also sets the stage for the research work that follows. Based on the above analysis, higher education institutions must make fundamental changes in educational thinking, educational methods and talent training models in order to cultivate and improve students' innovative spirit, entrepreneurial ability and adaptability.

III. RESEARCH METHODS

This paper adopts a qualitative approach. Qualitative analysis, or "qualitative research", is the study of things in terms of their nature and the contradictory changes in their movement, in terms of their internal laws. There are two levels of qualitative research: 1. Qualitative research without or without quantitative research, whose conclusions are generally general and reflective; 2. The characteristics of qualitative analysis: the aim is to obtain a qualitative understanding of the underlying causes and motivations.

IV. RESULTS AND DISCUSSION

4.1 The main issues that constrain education and technological innovation in higher education

4.1.1 The epidemic has led to a lack of guaranteed progress in innovation education in higher education

Universities have been delayed by the epidemic, requiring teachers and students to communicate and teach through online methods. However, some teachers have not adapted to teaching online in the context of the new coronary pneumonia epidemic and have encountered many problems with live and recorded classes. Teachers' own lack of information technology literacy usually takes a lot of time to solve problems when they encounter them, and the continuity of classroom teaching is affected. In addition, some practical projects, for example, have to be carried out through field research, and students need to experience the importance of some of the knowledge and skills in practice, which is a part that cannot be replaced by online teaching. Students are easily influenced by the various entertainment elements in the Internet when learning online, making it difficult to ensure learning efficiency.

4.1.2 Weak faculty leads to a lack of innovation

At present, the teaching and research theories of universities are not yet transformed into productivity. It is necessary to break the restrictions of the system and attract talents in an unconventional way humanities universities introduce technologies, engineers and senior technicians from engineering colleges, while engineering universities should make theoretical supplements so as to form advantages, integrate resources and accelerate the development of science and technology.

4.1.3 Old-fashioned philosophy of education and teaching

First, the lack of people-oriented thinking. In the current context of the times, the main task of college education reform is to realize the innovation of education concept, while the innovation of education concept is the fundamental guarantee to realize the innovation of education and teaching education, which is the premise to adapt to the development characteristics of the times and enhance the effectiveness of talent cultivation. In this process, teachers should promote the development of students' personality, comprehensively improve their comprehensive quality, create a good learning environment and promote students' active participation in the development and construction of society and economy. At the same time, university educators must establish a people-oriented and student-centred philosophy.

In the practice of education and teaching education, domestic scholars and experts have conducted in-depth discussions on the idea of "people-oriented". However, due to the importance that educators attach to student characteristics, student needs, student development and other issues, too much emphasis has been placed on system development and implementation, putting the development of the school in the first place, resulting in a lack of attention to students. Secondly, there is a lack of innovation. Reform is an important guarantee for achieving innovation in university education and improving the standard of schooling. However, at present, the awareness and understanding of innovation among the educators of our universities is still stuck in the traditional way, and there is a great risk that this will affect the normal work of the school. In this context, teachers need to guide, develop, expand, respect, encourage and increase the incentives for innovation in a holistic way.

4.1.4 Scientific and technological achievements are not transformed into productivity in a timely manner

Scientific research is the second main job of university teachers apart from teaching. The research results achieved by many university teachers in teaching are only textual results, which have not been transformed into teaching productivity and cannot effectively guide education and teaching; however, the transformation of scientific and technological results is conditional and time-consuming, and cannot be effective in a short period of time. Therefore, the problem of transformation of scientific and technological achievements has become a bottleneck that hinders the development of innovation capacity in universities.

4.2 Specific measures for education innovation in higher education

4.2.1 Establish the concept of innovative education

Innovative education is a new way of thinking and a new way of doing things, abandoning the traditional "experience" and "authority" concept of education and advocating "dare to think, dare to do, dare to break through". The essence of innovative education is to strengthen students' innovative spirit, innovative ability and innovative personality. Innovative education should focus on the concept of innovative education, cultivation of innovative talents, innovative education system and innovative teaching evaluation mechanism. The fundamental goal is to cultivate students' spirit of exploration, practical ability, comprehensive quality and innovative spirit.

4.2.2 Build a diversified talent training model

The implementation of innovative education should provide a good environment and conditions for the cultivation of innovative talents by deepening the talent cultivation model, establishing a diversified view of talents, adopting various methods, and adopting measures to teach according to the material, so that the curriculum system has the structural characteristics of "platform + module". In response to the characteristics of a discipline and the needs of students' common development, a basic platform of public courses has been established with secondary disciplines as the core, and modules of specialised courses have been set up according to the professional orientation. The teaching programme is optimised, class time is shortened and elective courses are increased, thus increasing the freedom of learning. It is set up in levels and modules to meet the needs of students in different majors and at different levels. It strengthens cultural quality education and adds relevant elective courses, laying a solid cultural foundation for university students to engage in creative activities. A major and minor curriculum system is implemented to strengthen the cultivation of comprehensive quality. Students with strong learning abilities are encouraged to study minors across disciplines and majors, creating favourable conditions for increasing the proportion of outstanding graduates who are directly promoted to master's degrees. Implement secondary teaching and training programmes, integrate courses on ideological education, science and technology innovation, culture and sports, and social practice into the training system for innovative talents, and unify students by building their extra-curricular quality and ability credits, so that their overall quality and creativity can be improved comprehensively. We need to give full play to the potential of our students and turn them into creative individuals. In particular, we need to abandon the concept of "poor students", develop their self-esteem and self-confidence, give full play to their creativity and create a relaxed learning environment. Only in this way can the creative qualities of students be enhanced in all aspects.

4.2.3 Actively carry out teaching management innovation

It is necessary to strengthen the management mode of the credit system and establish a flexible teaching management system with its own characteristics, so that students can have more choices, develop their personalities in terms of breadth and depth, enhance their autonomy and create a relaxed environment and space for them to grow. Classroom teaching is fully implemented, allowing students to choose their own teachers and breaking through the restrictions of majors and grades, so that students can choose courses across majors and grades. Implement graded teaching, divide compulsory courses into multiple levels and units, include optional courses in compulsory courses, and allow students to freely choose their own academic process by applying for exemptions, exemptions, independent study and taking examinations to obtain credits. To meet the needs of the credit system reform, the integrated management system based on the campus network has been further improved by abolishing the requirement for students to be withdrawn for failing their studies and by implementing a system of "class allocation", "fee payment", "registration" and "class scheduling", "class scheduling", "course selection", "grade management", "academic registration management ", "graduation qualification" management, so that the management of the school is more standardised, scientific and modern.

4.2.4 Emphasis on teaching content and educational methods to introduce new ideas

The implementation of quality education must be accompanied by a continuous change in the structure of the curriculum, as well as a focus on innovation in teaching methods and approaches. First of all, a new teaching content system must be established, with "novelty" and "advancement" being the main characteristics of innovation. This requires us to incorporate the latest scientific research findings into the teaching materials in a timely manner, while fully reflecting the times, openness, diversity and comprehensiveness. Assist students in constructing a world that is developmental, non-isolated, fixed, objective, meaningful, innovative and creative. Secondly, research-based learning should be promoted. In the classroom, we should change the traditional teaching methods, adopt a "human-centred" teaching method, take the initiative to inspire and guide students to think about problems, promote two-way interaction between teachers and students, and gradually change from "teaching" to "guiding". The teaching method is "people-oriented", actively inspiring and guiding students to think about problems, promoting two-way interaction between teachers and students, and gradually changing from "teaching" to "guiding". Finally, to cultivate students' divergent thinking, stimulate their curiosity and imagination, so that they can better develop and develop their autonomy, we need to innovate in teaching methods and use modern education technology to continuously improve the quality of teaching. In addition, enabling the development of creative thinking requires the addition of expertise related to innovation to the curriculum so that they can recognise the formation and characteristics of creativity and thus consciously reinforce the development of this ability. The focus is on developing creative thinking and promoting creative thinking in students. The development of creative education is accomplished through the use of modern teaching methods in a variety of forms, including sound and images.

4.2.5 Strengthen the application of information technology

Firstly, the introduction of advanced information technology. Modern information technology such as big data, cloud computing, artificial intelligence, database technology and new media technology has a distinct driving role and value in promoting change and innovation in university education management. Therefore, university administrators should improve their application of information technology to make it a grip for carrying out educational and educational work. In education practice, university educators should actively introduce advanced information technology and strengthen the innovation of education work through the application of information technology. For example, the integration of big data technology into education and teaching work can clarify the situation of students' education and teachers' education from the perspective of data mining, information analysis and information comparison, and clarify the emotional characteristics and behavioural characteristics of student groups in education and teaching, so as to enhance the relevance of education and teaching innovation. And the integration of artificial intelligence technology into teaching work can provide convenience for teachers and students.

Secondly, strengthen the platform construction. As the information education platform is the basis for all kinds of information technology applications, in the process of applying information technology, university educators should increase the supply of resources, capital investment and manpower allocation to provide reliable guarantee for the construction of the information education platform. Colleges and universities should also focus on evaluation and feedback, and in the process of building information education platforms, develop a scientific evaluation system to assess the effects of platform construction in a timely manner, so as to identify and solve problems in a timely manner. Finally, strengthen training. Educators in higher education should develop a scientific training mechanism from the perspective of information technology application and education platform operation, and deepen the understanding of modern information technology among education and teaching educators from the perspectives of awareness, thought, concept, knowledge, skills, ability and literacy, so that they can master the methods of applying information technology and thus use information technology and education platforms to change the education mode, education system and education methods under the influence of innovative ideas.

Finally, training should be strengthened. Educators in higher education should develop a scientific training mechanism from the perspective of information technology application and education platform operation, and deepen educators' understanding of modern information technology from the perspectives of awareness, thought, concept, knowledge, skills, ability and literacy, so that they can master the methods of applying information technology, and thus, under the influence of innovative ideas, use information technology and education platforms to change the education mode, education system and Education methods

V. CONCLUSION

In short, the sudden outbreak of the epidemic took all universities with surprise. It is precisely for this reason that the way universities educate themselves has changed. It has led to a completely different approach to education than before, which is a new approach to education that can effectively reduce the impact of the epidemic, while also ensuring that teaching is carried out properly and that students are able to study properly. Having experienced the epidemic, we are confident that the university's education model will be further improved and enhanced in the future, leading to a virtuous transition and transformation from the traditional to the modern way of teaching and learning. In university teaching, it is important to start with traditional teaching methods, to innovate and to continuously improve

the quality of scientific teaching. In teaching, we should make full use of modern education technology to enrich the teaching content, improve the teaching design, make students master the knowledge and make the combination of theory and practice, so as to improve the teaching effect.

REFERENCES

Fernando M. Reimers. (2020). Transforming education to prepare students to invent the future. PSU Research Review, ahead-of-print(ahead-of-print), pp. 81-91.

Li Fangrui. (2019). Research on the methods of innovative education in colleges and universities based on modern education technology. Think Tank Times (48), 280-281.

Li Xiaohui. (2014). Exploration and reflection on building educational innovation in colleges and universities. Science and Technology Perspectives (02), 235+296.

Wang, Xia, Chen, Yijun, Qin, Ping & Zhang, Liping. (2013). Reflections on innovation in higher education. China Adult Education (16), 14-16.

Xining Peng.(2020).Study on the Innovation of College Career Planning Education From the Perspective of "Integration of Innovation & Entrepreneurship and Specialty Education". *Advances in Educational Technology and Psychology*(1).

Zhang Xu. (2020). Reflections on the education model of universities in the context of the new crown epidemic. International Public Relations (12), 278-279.