ISSN 2616-5902 Vol. 5, Issue 1: 35-40, DOI: 10.25236/AJBM.2023.050106

The Integration and Role of Digital Technology in the Teaching of Local-featured Economics Courses in Secondary Schools

Su Kecheng[1,a]

[1]*Marshall Bussiness School, University of Southern California, Los Angeles, The United States*
[a]*sukecheng_admit@163.com*

Abstract: *Due to the impact of bursting information technology, a wide range of emerging education modes, such as online curriculum, online education and social media, are replacing students' behavioral habits. Moreover, the steady growth of education information technology investment in China from 2014 to 2021 also indicates that digital technology plays an important and revolutionary role in secondary school education. This paper suggests to think deeply about how to integrate digital technology into curriculum teaching of local-featured economics in secondary schools from the perspectives of supporting real-situation learning, facilitating learning efficiency, designing blend learning models, providing individualized support for students and enabling learning assessment, in hope to provide some insights for curriculum designers of local-featured economics in secondary schools.*

Keywords: *Digital technology; Local-featured economics; Curriculum teaching*

1. Introduction

According to the latest Evaluation Guide for the Quality of General High School Operation by the Ministry of Education of the People's Republic of China, the evaluation of high school education has incorporated the reform direction of diversification and characteristic development, which requires general high school education to focus on internal development and quality improvement. Economics is one of the most representative humanities and social science courses in secondary education, which can enable students' critical thinking on objective things by combining value rationality with instrumental rationality. When teaching the local-featured economics, the course rhythm should also be set according to the knowledge volume and learning ability of secondary school students, avoiding teaching obscure theoretical knowledge that is far from the reality. By adopting visual tools to show the realistic situation, it is possible to reduce the difficulty in learning economics and to encourage students' leaning enthusiasm.

Table 1: Investment in educational information technology in China of 2014-2021

Year	Investment of funds (billion yuan)	Year-on-Year Growth
2014	211.4	-
2015	233.8	10.60%
2016	251.2	7.44%
2017	273.6	8.92%
2018	296.0	8.19%
2019	320.4	8.24%
2020	343.1	7.08%
2021	368.7	7.46%

Source: Intelligence Research Group

In this regard, digital technology may be a groundbreaking reform in teaching the local-featured economics in secondary schools, which allows economics learning to exceed the traditional text and pictures. Based on the data, the investment volume in educational information technology in China has been growing annually since 2014. By the end of 2020, a total of 1.08 million teachers nationwide have provided 17.19 million online course programs, and the number of students participating in online learning has also reached 3.5 billion [1]. According to the research data of Intelligence Research Group, the investment in educational informatization in China has increased steadily during 2014-2021,

ISSN 2616-5902 Vol. 5, Issue 1: 35-40, DOI: 10.25236/AJBM.2023.050106

reaching CNY 368.7 billion in 2021. It can be seen from the table 1. This paper discusses the integration and role of digital technology in the teaching local-featured economics in secondary schools, and hopes to give some suggestions for improving the curriculum of secondary school in local-featured economics teaching.

2. Literature Review

2.1 Existing Problems of Local-featured Education in Secondary Schools

In previous studies, many scholars have presented critiques on local-featured education in secondary schools. Huangfu Linxiao (2020) [2] suggested that the development of general high-school education in China is overly "utilitarianism", and the local-featured curriculum lacks sufficient system support. Jiang Jun (2020) [3] argued that that quality education should focus on every subject discipline, so politic theory class in high school deserves more than enough emphasis. Based on the analysis of the local-featured education in private high schools in Henan Province, Zheng Lina and Sun Tao (2020) [4] noted that there was homogeneous defects in the local education competition.

2.2 Related Studies on Teaching Economics in Secondary Schools

Han Huamei(2015) [5] analyzed the ideas in teaching Basic Knowledge of Economics, and suggested that the teaching should return to the origin of ideas, broaden students' horizons and focus on spiritual growth. Cheng Li (2019) [6] analyzed the idea of carrying out economics courses in general high schools, and selected the experimental class of economics in the high school sector in Beijing Yuying School as a case study to discuss the advantages of the curriculum system of "basic course, morality cultivation course, and creativity course", inspiring the economics teaching in other high schools. Zhu Quan (2021) argued that economics education in secondary school is supposed to develop more on students' critical thinking skills [7].

2.3 Related Research on Economics Education in Secondary Schools of USA

There is a significant number of scholars who have compared the differences between China and the United States. Zhou Hong (2009) suggested through her comparative analysis that the development of economics education in American high schools was due to educational guidelines and the development of the national assessment of economics [8]. Fu, Ying (2018) analyzed the differences between China and U.S. in the basic economics curriculum in high schools. She argued that the knowledge structure in China should refer to the economics subject system and add some project-based activities.

2.4 Literature Review

After searching the literature on economics education in secondary schools via the China National Knowledge Infrastructure (short as CNKI), it is found that there are quite few scholars in China who have studied the issues related to economics education in secondary schools. The existing research topics mainly focus on economics education approaches, with very few scholars paying attention to the local-featured economics curriculum. Furthermore, with the impact of digital technology on high school curriculum and even on university economics education, it may also become a characteristic element in economics curriculum in secondary schools. Therefore, this paper explores the application of digital technology in local-featured economics curriculum in secondary schools, hoping to fill the research gap in the related field.

3. Current Status of the Development of Digitalization of Secondary Education and Economics Curriculum

3.1 Current Situation of Digitalization in Secondary Education

In the table 2, since 2017, the investment in education information technology in primary and secondary schools in China has increased year by year, from CNY 36.5 billion to CNY 49.2 billion in general middle schools and from CNY 24.4 billion to CNY 32.4 billion in general high schools. At present, the investment in education technology in primary and secondary schools has been in the

ISSN 2616-5902 Vol. 5, Issue 1: 35-40, DOI: 10.25236/AJBM.2023.050106

development stage of "application-driven, integration and innovation".

Table 2: Investment in information technology in primary and secondary schools in 2017-2021

Year	Investment in general elementary schools (CNY*billion)	Investment in general middle schools (CNY*billion)	Investment in general high schools (CNY*billion)
2017	60.7	36.5	24.4
2018	67.3	39.5	26.5
2019	74.7	42.7	28.8
2020	76.0	44.3	29.5
2021	81.8	49.2	32.4

Source: iResearch Consulting

However, although there is a large number of information technology functions provided for curriculum education, the application rate in primary and secondary schools is not high, which is due to the lack of informationization teaching competence of primary and secondary school teachers. The teachers are accustomed to traditional teaching methods, but they are less capable of applying digital technology. The application frequency of multimedia equipment is much less than that of blackboard, and the presentation form of lecture content is far from being intelligent, virtualized, nor vivid. Besides, although digital technology has solved the problem of public education resources sharing in China, the novelty of these resources is not enough. This results in the low quality of lectures, neither highlighting the innovation of the courses, nor targeting the requirements of lesson preparation for learning purposes, which makes it difficult to form an immersive listening experience.

3.2 Current Status of Economics Curriculum in Secondary Schools

First of all, the curriculum setting of economics in secondary schools is still a one-way teaching, ignoring to encourage critical thinking among students. However, it is critical thinking that requires students to think independently about economics phenomena. Such standardized teaching is more likely to make economics curriculum lose its characteristics, in which the answers that are different from the standard answer is always regarded as wrong. This traditional one-way teaching method is driving students more and more detached from real life, and making students' thinking to be shackled more easily.

Secondly, economics education in secondary schools is more about theory learning, without highlighting the scientific nature of economics. What's worse, mathematical tools and case studies are barely applied in the course study, causing the theoretical knowledge being more abstract to the students in secondary schools. Students can only learn about economics through rote memorization and rigid application. For example, students are taught about the concepts of GDP and CPI in the classroom, but they know nothing about the historical origin and economic phenomena of the two terms when teachers failed to adopt the modern advanced teaching techniques. Modern basic theories of classroom instruction are shown in Table 3.

Table 3: Basic theory of classroom instruction

Category	Core Concepts
PBL Method	With the teacher's guidance, students can find the course problem and solve the problem independently via group discussion and data collection.
Flipped Class Model	With active learning completed in advance by the students, teachers organize personalized discussion in class.
Blended Learning	Leverage the benefits of online and offline instruction to enhance assessment of the teaching process.

Source: Liu Hongmei and Chu Yexian (2021); Wang Ying and Xu Chuanhua (2020); Bian Zhiqun (2021)

Lastly, there are many secondary schools in China that offer local-featured economics courses, but the pressure of class time and exams still leads to less involvement in stimulating and interactive activities, providing few follow-ups tutorial work in social practice activities, and thus causing the study and exam content to be a showcase.

ISSN 2616-5902 Vol. 5, Issue 1: 35-40, DOI: 10.25236/AJBM.2023.050106

4. The Integration of Digital Technology in the Teaching of Local-featured Economics Curriculum in Secondary Schools

The connotation of local-featured economics curriculum in secondary schools lies in cultivating students' critical thinking ability rather than rote memorization of theoretical knowledge. It aims to inspire individuality and focus on personal growth, which also requires teachers' leading capability and students' proactivity in curriculum teaching. In this regard, digital technology is definitely an effective tool to achieve this goal. According to Horizon Report 2016-2021 in the table 4, digital technology is becoming more and more widely used in teaching application.

Table 4: Mentions in Horizon Report 2016-2021

Year	Learning Technologies	Enabling Technologies	Visualization Technology	Digital Strategy	Consumer Technology	Social Media Technology	Internet Technologies
2016	1	1	1	2	1	0	0
2017	3	2	0	0	0	0	1
2018	2	1	1	1	1	0	0
2019	2	2	1	0	0	0	1
2020	3	2	1	0	0	0	0
2021	4	1	0	1	0	0	0

Source: Horizon Report 2016-2021

4.1 Digital Technology Supports Real-Situation Teaching Pattern

Most concepts in economics are abstract and theoretical, which usually require data and charts to enhance the expression of ideas or knowledge. Digital technology is efficient in data updates, computing power and visualization, while computers can be applied to conduct sand table simulations to involve case studies and interactive discussion during the teaching process within the classroom. The involvement includes not only economic data analysis and mathematical model construction, but also securities simulation trading and business operation experience, etc. In this way, students can experience the real economic situation inside the classroom and discuss innovative ideas upon the theories from the text. Using computer systems and digital visualization to simulate scenarios of the social and economic environment and to enhance students' immersion experience is effective in improving the efficiency of both teaching and learning, which is the so-called digital technology-based real-situation teaching pattern. For instance, with digital technology, teachers can be better prepared with visualization case study materials for different courses. With the help of digital technology, these content with images, data and literature documentation then can be presented more visualized and more vivid. What's more, the digital system can also be programmed to examine students' understanding of the content on the spot by asking prompt questions. For example, when David Ricardo's comparative cost theory is introduced in the class, the data of money supply and inflation in the UK at the moment can be presented instantly with images, charts and other aspects of extra-curricular data, which is more likely for students to get impressed.

4.2 Smart Technologies Facilitate Learning Efficiency

As mentioned earlier, digital technologies can be used not only as a heuristic learning tool, but also as "lecturers" to relieve the burden of teachers in teaching economics courses in secondary schools. For example, digital teachers can offer answers to basic questions for students during the course learning, and give feedback on students' confusions by constantly reinforcing and reminding students of their learning content.

The local-featured economics course in secondary schools requires a large amount of real-life data that are close to the content, so it is inevitable to have a huge amount of cases, texts, literature, data and other information in the course system. Coincidentally, digital technology excels at categorizing various data by using knowledge mapping to sort out keywords and characteristic attributes of different information to facilitate resource retrieval for teachers and students. Meanwhile, the problem of information processing overload is solved. Rather than simply moving the blackboard-writing economics course to online presentation, digital intelligence collaborates the advantages of the technology to enhance the understanding and use of content among teachers and students, which facilitates teaching and learning efficiency as a whole.

ISSN 2616-5902 Vol. 5, Issue 1: 35-40, DOI: 10.25236/AJBM.2023.050106

4.3 Blending Learning Model Design

Blending learning refers to the model of combining traditional learning with e-learning, which requires the curriculum design to adopt the advantages of both. Therefore, digital technology can serve as a useful tool to perform quality, flexible and personalized educational service, instead of being used to complete the course teaching within the classroom. The local-featured economics curriculum is supposed to be student-centered, of which the teaching mechanism can facilitate more involvement of students. Group work (including group discussion, group study, and group assignment) is a traditional form of interactive teaching that encourages students' initiative participation, whilst digital technology is a supportive tool that can further solve the problem of students' lack of subjective initiative and help create a more effective mechanism of group labor division. E.g., when the teaching subject is "Differences between planned and market economies" in high school, a debate can be conducted in groups to strengthen students' understanding of the topic. Digital technology can serve as a real-time library of resources for students to independently search for information that supports their ideas, so as to encourage students to review the literature and broaden their minds.

Supporting measures should be included in the curriculum as well. In terms of incentives to engage students in the blending learning model, the local-featured economics course in secondary schools can adopt a gamified competition mechanism, which can, for example, provide a quantitative basis for scoring according to each student's/group's productivity. The scoring mechanism should be different from the previous single-scoring mechanism, in which the application of multi-modal learning analysis technique can be tried to provide well-rounded evaluation of students' knowledge and ability maps in economics courses and give corresponding feedback to avoid unbalanced scoring results. For example, radar graphical scoring can be applied on classroom feedback, assignment output, learning efficiency, and exam performance.

4.4 Individualized Learning Support for Students

In the traditional curriculum in secondary schools, due to the limitations of technical conditions, only one curriculum setting can be provided and considered as being suitable for most students, which fails to pay attention to the differences in learning progress and learning capability among different students. Since the online course education system in secondary school has been relatively developed, the local-featured economics curriculum should try to meet the individual needs of students, and examine the differences in personal interests, learning abilities, and basic knowledge. In this paper, it is suggested that economics courses in secondary schools should, on the one hand, use digital technology to bridge the gap between students' curiosity and learning accessibility, and explore a student-oriented model in which teachers can link a variety of learning resources, economics cases and research data to the digital system, and allow students to access and study on their own after class. Teachers can also adjust the courses teaching and assignment according to the amount of viewing, downloading and usage of the materials. On the other, digital technology is capable of keeping records of each student's learning progress, simulation exercises, and quiz result, etc.. Students can also get absorbed in exploring and learning independently according to their own interest. With the feedback provided via digital technology, students can make up for the shortcomings in their learning effectiveness, taking advantage of their own curiosity and initiative. To a certain extent, it can achieve the notion of Confucius in the ancient China, that is, to "teach students in accordance with their specific aptitude", which emphasizes the individualized quality education.

Therefore, teaching local-featured economics in secondary schools needs to integrate the role of digital technology in guiding and fitting in students' learning planning, rather than copying the traditional lecture-style teaching model. The role of digital technology in designing staged learning plans and classroom assessment mechanisms can be fulfilled by having the online system provide a modular knowledge presentation and the teachers provide differentiated instruction to different students. Digital technology can help and determine whether students need to speed up or slow down their learning, and whether they need to learn more deeply or review previous knowledge in specific chapters, depending on their own learning progress. For example, when students find it difficult to learn the section on Roosevelt's New Deal, they can instantly go back to the historical background of the relative chapter, in which way digital technology can enrich and expand the content of the textbook to enhance their understanding and memory.

ISSN 2616-5902 Vol. 5, Issue 1: 35-40, DOI: 10.25236/AJBM.2023.050106

4.5 Enabling Learning Assessment through Digital Technology

In the curriculum setting, the experience of Cheng Li (2019) can be taken into account by matching a "mentor" in each group, and the mentor can supervise the students' research on their topics. After all, project research is an important process for highlighting students' independent thinking and discernment in a local-featured economics course. Mentors can take students outside the classroom to organize and participate in social practice, such as participating in business or economics challenges for secondary school students. In the long run, digital technology can improve students' learning efficiency and support their participation in extracurricular economics competitions, which is a visual representation of the effectiveness of a local-featured economics course. In this regard, digital technologies can then overcome the problem of accessibility and feasibility of students' independent extra-curricular learning. It is also possible for the on-campus courses to cooperate with off-campus institutions to obtain more real-life cases, data or simulated scenarios for the local-featured economics courses, or even invite experts out of school to give lectures, which can enrich practical activities for students beyond the classroom.

5. Summary

Local-featured economics curriculum in secondary schools is crucial for the operation quality of secondary schools, and is beneficial for schools to cultivate students with critical thinking skills. There is no doubt that digital technology can break the shackles in the traditional economics teaching, and also solve the problem of the past of singularity of curriculum informatization. The effective use of digital technology can facilitate students' initiative, learning convenience and individualized education in economics, provide feedback mechanism for students, and reduce the burden of teachers in lesson preparation, as well as increase creativity in teaching. In this paper, it is suggested to think in-depth about how digital technology can be integrated into local-featured economics curriculum teaching in secondary schools in terms of supporting real-situation learning, facilitating learning efficiency, designing blend learning models, providing individualized support for students and enabling learning assessment, in hope to provide some insights for curriculum designers of local-featured economics in secondary schools.

References

[1] Huangfu Linxiao. The Realistic Dilemma and Performance Improvement Path of the Characteristic Development of General High Schools in China[J]. Contemporary Education Science, 2020(1):6.
[2] Jiang Jun. Analysis on How to Improve the Teaching Efficiency of Politic Theory Course in High Schools [J]. Nanbeiqiao, 2020.
[3] Zheng Lina, Sun Tao. Research on the Construction of Characteristics of Private High School Education in Henan. Henan Education Forum, 2016, 3, 106-210.
[4] Han Huamei. Teaching Basic Knowledge of Economics Requires to Get Through the 'Last Mile'[J]. Reference on Teaching Politic Theory in Secondary Schools, 2015(6):2.
[5] Cheng Li. Practical Exploration of Offering Economics Courses in General High Schools[J]. Basic Education Forum,2019(24):8-11.
[6] Zhu Quan. The Development of Students' Critical Thinking Skills in Economics Courses [J]. Heilongjiang Education: Higher Education Research and Evaluation, 2021(4):2
[7] Zhou Hong. The Practice of Modern Economics Education in American high schools and its Inspiration [J]. Foreign Education Research, 2009(8):5.
[8] Fu Ying. A Comparative Study of Basic Economics Courses in High Schools in China and the United States [J]. Journal of Tianjin Normal University (Basic Education Edition), 2018(4):35-41.