

Article

Construction and Implementation of Health Education Curriculum from the Perspective of Internet Technology

Haoyu Wang

Beijing No.27 High School, Beijing 100006, China; wanghaoyu09@163.com; CHN-HaoyuWang@ieee.org;

Received: Jul 23, 2024; **Revised:** Sep 08, 2024; **Accepted:** Sep 17, 2024; **Published:** Nov 10, 2024

Abstract: Educational informatization with the Internet technology has brought conveniences for "health education" curriculum and diversified teaching methods and models. The construction and implementation of the curriculum enhance students' core competencies and play a significant role in their growth and development. Based on the Internet technology, a health education curriculum was constructed in this study. By examining the literacy, topics, contents, and types of the curriculum, the design for the curriculum was created. The curriculum was implemented in instructional guidance strategies, teaching methods, and course types. The paths and situations where Internet technology empowers the health education curriculum were explored to establish a complete framework of the curriculum, improve teaching, nurture students' concepts, knowledge, and skills related to health, and enable practical teaching in health education. Additionally, the unique features and innovations in teachers' instruction and students' learning in health education were investigated.

Keywords: Internet, Educational Technology, Curriculum Construction, Health Education, High School

1. Introduction

The information age poses new challenges to school education (Wang,2024). In February 2019, the Communist Party of China Central Committee and the State Council issued the "China Education Modernization 2035", which emphasizes the establishment of a modern educational management and academic evaluation system to explore information-based teaching methods and integrate personalized education. The "Educational Informatization 2.0 Action Plan" stresses that education is to develop information technology capabilities and enhance information technology literacy. However, in the information age, the traditional "transmission-reception" teaching model is obsolete and does not meet the needs of educational development, hindering the expression of students' subjectivity (Wang,2017a; Wang,2017b). Educational informatization allows for convenient environments and teaching methods and models (Wang,2019).

The Ministry of Education of the People's Republic of China issued the "Guidelines for Health Education in Primary and Secondary Schools" and the "Guidelines for Mental Health Education in Primary and Secondary Schools (Revised in 2012)" in 2008 and 2012, respectively. The guidelines require strengthening health education. In 2016, the State Council issued the "Healthy China 2030" Plan was proposed to incorporate health education into the national education system as an important content. In 2019, the "Opinions of the State Council on Implementing the Healthy China Action" and the "Healthy China Action (2019–2030)" was introduced at the national level for the implementation of health promotion action and the action goals and measures in primary and secondary schools. In 2021, the "Opinions of the Ministry of Education and Five Other Departments on Comprehensively Strengthening and Improving School Health and Health Education in the New Era" was announced to ensure and improve the effectiveness of health education. Such policies on health education demonstrate the importance of health literacy nationwide.

Health literacy is important for students' development (Gao, 2017; Yang, 2011). Health knowledge is important in teaching (Liu,2006), and the improvement of middle school students' health literacy depends on how to learn health education in a well-defined curriculum (Pang,2023). Students in middle schools are growing their bodies, learning knowledge (Liu,2023; Wang, 2022), and forming desirable behaviors, which necessitates health education (Huan, 2023). Through health education, students can learn scientific and systematic knowledge and skills related to health (Pan,2022) with appropriate habits (Liu,2022; Xie, 2022). Middle school students can benefit from health education for a lifetime which impacts their parents, neighbors, friends, and society (Zhuo, 2022; Pan, 2022). Therefore, the awareness of hygiene, the establishment of healthy behaviors and lifestyles, the establishment of moral sentiments, and the promotion of social progress and civilization largely depend on the quality of the health education curriculum in school (Wang,2022; Tang,2022).

With the development of technology and society, the content and form of health education have been changed, and the requirement for appropriate health education curricula is increasing. In Beijing No. 27 High School, a case study was conducted in this research to construct an education curriculum for safety and disease prevention considering students' physiological and psychological characteristics.

2. Health Education Curriculum and Internet Technology

2.1. Design of Health Education Curriculum

The health education curriculum needs to include objectives, literacy, topics, and an evaluation method.

Health education’s purpose is to promote students' health. In health education, students and public awareness of health is raised by learning the necessary knowledge and skills. Students can adopt and maintain healthy behaviors and lifestyles, reducing or eliminating risks that affect health and laying a solid foundation for lifelong health. The core literacy of the curriculum is important in education (Chang, 2021). In the related courses, students gradually develop values, traits, and key abilities. The health education curriculum needs to include "health awareness" and "health behavior".

Health awareness is established with correct concepts and knowledge in five aspects: healthy behavior and lifestyle, disease prevention, mental health, growth and development, adolescent health, safety emergency response, and risk avoidance. Each individual is responsible for personal health as an obligation. Healthy behavior is based on correct concepts and methods which are obtained by observing phenomena and analyzing and solving health-related problems in daily life. Health knowledge must be applied to practice for the harmonious development of body and mind.

2.2 Curricula

The course topic is chosen in five aspects: healthy behavior and lifestyle, disease prevention, mental health, growth and development and adolescent health, safety emergency, and risk avoidance. The topics of the health education curriculum must be independent and mutually influencing (Fig.1).

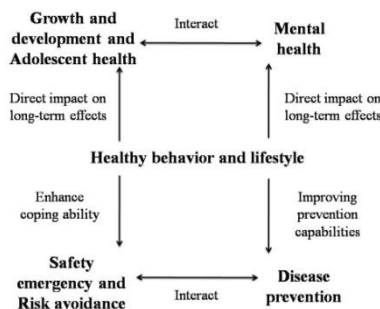


Fig. 1. Topics in health education curriculum.

The course types are classified into theoretical, practical, and evaluation curricula. Theoretical curriculum aims to teach theories and knowledge; Practical curriculum focuses on cultivating students' skills; Evaluating curriculum is needed to examine students' knowledge and skills. The curricula are independent but interrelated. A theoretical curriculum is taught to cultivate students' abilities. A practical curriculum is established based on professional theory. In practical curricula, emotional understanding lacking in the theoretical curricula is enhanced through the teaching process to contribute to the student's understanding of knowledge and solve problems that cannot be in the theoretical curriculum. Evaluating curriculum is needed to evaluate the learning effectiveness and the quality of the curriculum. Through the evaluation of learning effectiveness, teaching content can be improved and enriched, providing a basis for exploring additional theoretical and practical curricula. There is a relationship between the three types of curricula as shown in Fig.2.

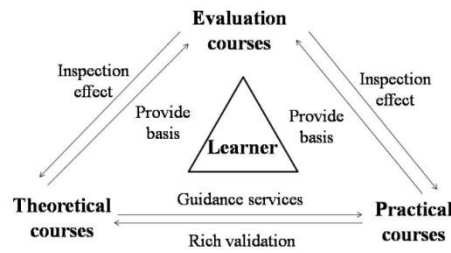


Fig. 2. Relationship of curricula.

In theoretical, practical, and evaluation curricula, course topics and content are constructed. In health education, students can improve attitudes, behaviors, concepts, knowledge, and skills on health. There is a close relationship between students, curricula, and topics and content (Fig.3).

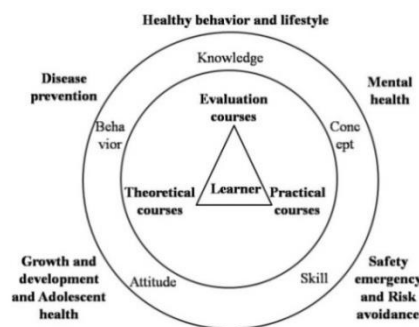


Fig. 3. Relationship between learners, curricula, and topics.

2.3 Evaluation Method

Evaluation is the value assessment made based on a standard. In the health education curriculum, task-based assessment is conducted, emphasizing the importance of process-based assessment. The maximum score for evaluation is 100 points, with 60 points for task evaluation and 40 points for daily performance.

2.4. Implementation of Health Education Curriculum

The health education curriculum is implemented based on its course design including teaching strategies and methods. Teachers develop teaching strategies based on the objectives, content, and activity in the health education curriculum. "Autonomy", "planning", and "purposefulness" are important for course content. "Autonomy" refers to allowing students to choose course information that they are interested in before class. Teachers ask students to collect information on their own, rather than specifying specific information. "Planning" refers to the ability to focus on the school-based curriculum, reflect on students' situations, and collect and analyze relevant information. "Purposefulness" refers to learning content with objectives and requirements in the entire learning process to obtain information, accumulate knowledge, and cultivate abilities. Teachers guide students to learn content according to the course plan. The teaching and learning time is limited. Therefore, teachers must help students to independently learn and improve their abilities. Learning materials must be appropriate for students' situations and daily lives to stimulate learning enthusiasm. Teaching materials must be analyzed from multiple perspectives to provide knowledge. In the learning process, materials must contain novel ideas, unique perspectives, new knowledge, and easily understandable aspects. Then, students are encouraged to choose materials independently, stimulate their interest in them, and are guided in their learning.

Teachers need to develop teaching strategies based on the curriculum for students to take exploratory learning. A new course is introduced by using questions, providing resources, designing activities, and allowing students to draw their conclusions through analysis, evaluation, communication, and discussion. Teachers need to use their strategies and choose materials related to their lives. In the application of the curriculum, teacher's comments, student analysis, and group discussions are required. The combination of autonomous learning and collaborative learning requires each student to browse learning resources, actively express their opinions,

and have timely feedback. In collaborative learning, students carry out group discussions, classroom exchanges, cooperative design, and other activities.\

2.5 Teaching Method

In teaching the health education curriculum, diverse instructional approaches must be employed including critical analysis, discussion, collaboration, and sharing. Situational teaching can immerse students in real-life scenarios. Additionally, experiential learning techniques can be used to allow students to learn through direct experience and personal engagement. Furthermore, multimedia can be incorporated to enhance learning through various presentations.

2.3. Evaluation in Health Education Curriculum

The effectiveness of the health education curriculum is assessed using learning and teaching outcomes.

The evaluation of students' knowledge enables them to have a correct understanding of the knowledge and establish a correct concept. The evaluation of learning is conducted to understand how students have applied the knowledge learned in class in real life and correctly and scientifically used health knowledge and skills. Teachers evaluate students' daily performance. In the curriculum, students interact with teachers and engage in independent learning. Students can have divergent thinking, draw inferences from each other, actively participate, and have daily learning. The performance of students affects their learning and behavior. The learning and behavior reflect students' daily performance being related and interactive. There is an inherent logic in the evaluation of students' knowledge, practice, and performance (Fig.4). The evaluation of students' learning effectiveness is conducted using the teacher's evaluation of the student's notes, school reports, group learning, experiments, and performance in on and off classroom.

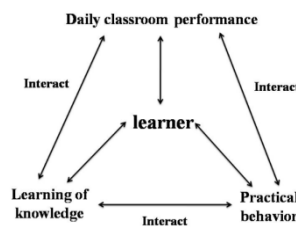


Fig. 4. Evaluation of learning effectiveness.

Teaching objectives coincided with course objectives. Teachers explain the difficult points of the course thoroughly and clarify the key points in the specified time. The completion of teaching depends on the student's physical and mental development and teaching situation. Teaching materials must be related to students' lives to implement the curriculum effectively, and the course teaching needs to conform to teaching theories to achieve expected teaching effects. Students need to be assisted in mastering content, and the teaching method and strategies must be established to meet their requirements. The effect of the curriculum can be increased by reflecting on the situation of students and identifying and analyzing their problems. Teaching the curriculum needs to be related to these problems, making students feel that the curriculum is relevant to life, stimulating their interest in learning, and mastering the content. The effectiveness of teaching can be evaluated through their learning by testing the mastery of knowledge and skills. Students must be able to apply their knowledge and skills.

2.4. Health Education Curriculum and Internet Technology

Internet technology can empower health education. The Internet provides teachers and students with abundant knowledge on platforms such as CNKI, Web of Science, ORCID, and ResearchGate and supports teaching through various means and technologies. Learning progress tracking, quizzes, discussions, video and micro-lectures, and gamified tests can be used online. Figure 5 illustrates how Internet technology empowers health education curriculum and teaching at different stages.

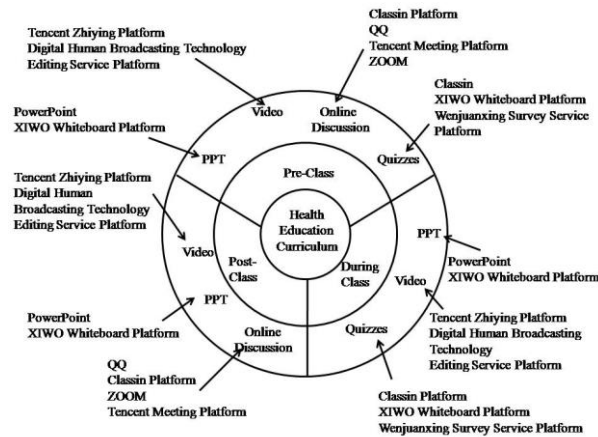


Fig. 5. Health education curriculum with Internet technology.

Digital broadcasting technology was used to create videos tailored to course requirements and student needs in this study. XIWO Whiteboard was employed to develop gamified tests and enrich teaching resources. Digital video production and gamified test using XIWO Whiteboard are described in Table 1.

Table 1. Production of video and XIWO whiteboard gamification tests in health education curriculum.

Topics	Digital Announcer Video Quantity (number)	XIWO Test (number)
Modern Concepts of Health	2	1
Drinking Water and Health	1	1
Smoking: The Great Enemy of Health	2	1
The Delicate Art of Exercise	1	1
Social Adaptation and Health	1	1
The Easily Overlooked Infectious Disease: Influenza	1	1
Physiological Changes During Adolescence	2	1
Proper Interactions with the Opposite Sex	1	1
Pets Can Also Harm People	1	1
Prevention and Treatment of Burns and Scalds	2	1
Sleep and Health	1	1
Tuberculosis and Health	1	1
Dental Caries and Health	1	1
Balanced Diet	2	1
Fire Prevention and Self-Rescue	3	1
Alcoholism: A Killer of Life	2	1
Media Literacy Education for Middle School Students	2	1
Unhealthy Lifestyles Harm Health	1	1
The Terrifying Specter of Drugs	1	1
Mental Health of Middle School Students	1	1
A Positive Approach to Acne	1	1
Prevention and Management of Sports Injuries	3	1
Self-Rescue and First Aid for Drowning	2	1
AIDS and Health	2	1
Using Eyes Scientifically to Prevent Myopia	2	1

3. Effectiveness of Health Education Curriculum

Based on 10 years of experience in health education, Beijing No. 27 High School has constructed a complete curriculum. Using the curriculum, the teaching quality has been improved, and students' concepts, knowledge, and skills related to health issues have been cultivated. A large amount of teaching and learning resources have been accumulated. The student's health has been improved,

and health education has become an important component of the school work. Through 10 years of teaching practice and improvement, the health education curriculum has been continuously improved. The health education curriculum has been established in the school with core literacy, objectives, topics, and content. Teaching and learning strategies and methods have been explored to improve evaluation and develop resources.

The health education curriculum of Beijing No. 27 High School has been a key curriculum since 2015 with 1,158 students learning it. The curriculum has been evaluated. Significant achievements have been made in standardizing teaching content, methods, and management. Teaching quality has been also continuously improved. The school has made students learn experientially and immersively, enhancing their practical abilities. Through course construction, students have mastered health knowledge and skills to handle health problems and have a healthy life with harmonious physical and mental health. Diverse teaching modes are beneficial for students to combine theoretical knowledge with practical experience. Teachers utilize case analyses, scenario simulation, and immersive experiences to effectively teach students health issues to fulfill teaching objectives. Emphasis is placed on acquiring knowledge and skills through participation in activities to enable students to apply the knowledge learned in school to life. Teachers let students personally engage in training to promptly identify and solve problems and cultivate their abilities. Teachers and students have experiences and share them during and after class in the teaching process. The materials have been standardized, and the effectiveness has been proven significant. The resources for teaching and learning include course plans, multimedia courseware, case studies, videos, databases, and others. According to the needs of the curriculum, teachers have edited, written, and published course materials to enrich the resources.

4. Conclusions

Internet technology has provided conveniences in health education diversifying teaching methods and models. The health education curriculum is important in the national curriculum, especially for the growth of middle school students. The curriculum is important to improve students' health literacy. Beijing No. 27 High School has elaborated curriculum construction and developed core literacy, curriculum topics and content, and the types of curricula. In this study, how the curriculum was implemented was explored, and teaching strategies, methods, and the implementation of types of curriculum were examined. The proven effectiveness of the curriculum has improved the teaching quality and cultivated students' concepts, knowledge, and skills of health. The curriculum has enriched teaching the health education curriculum. The health education curriculum of Beijing No. 27 High School has been acknowledged by the Ministry of Education as a basic education curriculum. This achievement has facilitated its widespread adoption and promotion in the school district. The result of the health education in the school provides information and a basis for future reforms in health education.

Funding: This research did not receive external funding.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest: The author declares no conflict of interest.

References

1. Chang, SH. Li, J. (2015). The Construction of Core Literacy System under the Background of Deepening Curriculum Reform. *Curriculum, Textbooks, Teaching methods.* 35(09),29–35. doi:10.19877/j.cnki.kcjcf.2015.09.005.
2. Gao, R. Zhang, J. Mao, ZH.(2007). Reflection on the Reform of Physical Education and Health Curriculum in Basic Education in China. *Journal of Beijing Sport University.* (01),74–77. doi:10.19582/j.cnki.11-3785/g8.2007.01.029.
3. Huan, G.Ye, W. (2023).The Promotion Path of the Connection between Preschool and Primary Physical Education under the Concept of the Curriculum Standards for Physical Education and Health in Compulsory Education (2022 Edition). *Journal of Physical Education.* 39(01),8–13. doi:10.16419/j.cnki.42-1684/g8.2023.01.007.
4. Liu, M. Sun, Q. Fu, Y. (2006).Reflection on the Reform of Physical Education and Health Curriculum in Basic Education. *Sports Science.* (10),75–81. doi:10.16469/j.css.2006.10.012.
5. Liu,J.(2022). Highlights and Major Changes in the Curriculum Standards for Physical Education and Health in Compulsory Education (2022 Edition). *Curriculum, Textbooks, Teaching methods.* 42(10),54–59. doi: 10.19877/j.cnki.kcjcf. 2022.10.002.
6. Liu,H.(2023). Research on the Construction of Health Knowledge and Students' Sports Behavior under the Background of Health First. *Contemporary Sports Technology.* 13(10),170–173. doi:10.16655/j.cnki.2095-2813.2212-1579- 3046.
7. Pan,Q.(2022). Research on the Current Situation and Strategies of Primary School Physical Education and Health Education Curriculum from the Perspective of Healthy China. *Contemporary Sports Technology.* 12(34),165-169.doi:10.16655/j.cnki.2095-2813.2209-1579-0409.

8. Pan, SH. (2022). Explanation of the Concept of Cultivating Core Literacy in China's Compulsory Education Physical Education and Health Curriculum. *Journal of Capital Institute of Physical Education*. 34(03), 234–240. doi:10.14036/j.cnki.cn11-4513. 2022.03.002.
9. Pang, D. You, H. Wang, L. (2023). A Study on the Changes of the Curriculum Standards for Physical Education and Health in Compulsory Education from the Perspective of Multi source Flow Theory. *Sports Research and Education*. 38(02), 52–60. DOI:10.16207/j.cnki.2095- 235x.2023.02.015.
10. Tang, X. Liu, Y. Liu, D. Ding, K. Dou, ZH. Zhang, L. (2022). Analysis of the current situation and influencing factors of health education curriculum in primary and secondary schools in China. *Health education in China*. 38(02), 103–106. doi:10.16168/j.cnki.issn.1002-9982.2022.02.002.
11. Wang, H. (2017a). Development and Future of Creativity Teaching. *Knowledge Economy, Science And Technology, Neurosciences and Creativity*. Proceedings of the 3rd International Conference on Arts, Design and Contemporary Education (ICADCE 2017), 29–30 May 2017, Moscow, Russia; 780–783. doi: 10.2991/icadce-17.2017.189.
12. Wang, H. (2017b). The Integration of Media literacy education into Ideology and morality education at China's High Schools. Proceedings of the 2nd International Conference on Contemporary Education, Social Sciences and Humanities (ICCESSH 2017), 14–15 June 2017, Moscow, Russia; 191–197. doi: 10.2991/iccessh-17.2017.46.
13. Wang, H. Zhong, T. (2019). Analysis on the Research Hotspots and Trends of the Media Literacy Education for Chinese Students. Proceedings of the 2nd International Conference on Contemporary Education, Social Sciences and Ecological Studies (CESSSES 2019), 5–6 June 2019, Moscow, Russia; 146–150. doi: 10.2991/cesses-19.2019.35.
14. Wang, H. Liu, Y. Han, Z. Wang, J. (2020). Extension of Media Literacy from the Perspective of Artificial Intelligence and Implementation Strategies of Artificial Intelligence Subjects in Junior High Schools. 2020 International Conference on Artificial Intelligence and Education, 26–28 June 2020, Tianjin, China; 63–66. doi: 10.1109/icaie50891.2020.00022.
15. Wang, X. (2022). The Content Structure and Characteristics of the Curriculum Standards for Physical Education and Health in Compulsory Education (2022 Edition). *Journal of Capital Institute of Physical Education*. 34(03), 241–252. doi:10.14036/j.cnki.cn11-4513.2022.03.003.
16. Wang, L. Chen, Y. Li, Q. (2023). Analysis of the Curriculum Standards for Physical Education and Health in Compulsory Education (2022 Edition). *Education and Teaching Research*. (3), 9. doi:10.13627/j.cnki.cdjy.20230321.001.
17. Wang, H. (2024). Reflections on the Application of Virtual Reality (VR) Technology to Morality and Rule of Law Education. *Educational Innovations and Emerging Technologies*, 4(2), 20–23. <https://doi.org/10.35745/eiet2024v04.02.0003>
18. Xie, L. Xin Long, X. Zhang, X. Zhang, H. Ji, Y. (2022). Design and Practice of Health Education Curriculum for Senior Primary School Students in Beijing. *Health education in China*. 38(09), 849–854. doi: 10.16168/j.cnki.issn.1002-9982.2022.09.017.
19. Yang, W. (2011). Reflections on the Revision of the Curriculum Standards for Physical Education and Health. *Sports Journal*. 18(05), 1–3. doi:10.16237/j.cnki.cn44-1404/g8.2011.05.005.
20. Zhuo, X. (2022). Research on Optimizing the Model of Physical Education and Health Education in Universities in the Context of Life Safety. *Contemporary Sports Technology*. 12(24), 170–173. doi:10.16655/j.cnki.2095-2813.2201-1579-1945.

Publisher's Note: IIKII stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



© 2024 The Author(s). Published with license by IIKII, Singapore. This is an Open Access article distributed under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/) (CC BY), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.