

Research on Innovation Paths of Higher Nursing Education in the Context of Smart Teaching

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Abstract: With the deep integration of digitization and intelligence, smart teaching has become an important trend in the field of education. As a key link in cultivating professional nursing talents, higher nursing education faces new opportunities and challenges in the context of smart teaching. This article deeply explores the necessity of innovating higher nursing education in the context of smart teaching, analyzes the current problems in higher nursing education, and proposes specific innovation paths from the aspects of teaching philosophy, teaching mode, teaching resources, teacher team building, and evaluation system. The aim is to improve the quality of higher nursing education and provide theoretical references for cultivating high-quality nursing talents that meet the needs of smart healthcare.

Keywords: Smart teaching; Higher nursing education; Innovation path

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1. Introduction

Nursing is an important component of medical and health services, and high-quality nursing talents play a key role in improving the quality of medical services and ensuring people's health. Higher nursing education bears the important task of cultivating professional nursing talents for society, and its education quality is directly related to the development level of the nursing industry. Today, with the rapid development of information technology, smart teaching, as a new teaching form that integrates advanced information technology and educational concepts, provides new opportunities for the reform and development of higher nursing education. By introducing smart teaching methods, higher nursing education can better meet the diverse learning needs of students, improve teaching effectiveness, cultivate students' innovative and practical abilities, and thus provide more competitive professional talents for the nursing industry. Therefore, it is of great practical significance to study the innovation paths of higher nursing education in the context of smart teaching.

2. The necessity of innovating higher nursing education in the context of smart teaching

2.1. Adapting to new social development needs for nursing talents

With the development of social economy and the transformation of people's health concepts, the demand for nursing talents in society has shown a diversified and high-level trend. Besides solid professional knowledge and skills, modern nursing talents also need innovative thinking, communication and collaboration skills, information literacy, and comprehensive abilities to deal with complex clinical situations. Smart teaching, supported by information technology, can provide students with richer and more diverse learning resources and practical opportunities, which helps cultivate students' comprehensive qualities and better adapt them to the new requirements of social development for nursing talents.

2.2. Meeting the needs of students' personalized learning

The new round of technological revolution represented by information technology, digital technology, and artificial intelligence has spawned new industries, new formats, and new models, which have had a significant and far-reaching impact on nursing education. In the era of big data, students are prone to be bored with the traditional single teaching mode and no longer want to become hard drives for storing knowledge. Through technologies such as big data analysis, smart teaching can understand each student's learning characteristics, interests, and learning progress. This enables the provision of personalized learning programs and precise learning guidance for students so that their learning is no longer limited by specific time and space, achieving autonomous learning without time and location restrictions. This satisfies students' diverse learning needs and stimulates their enthusiasm and initiative in learning.

2.3. Promoting the in-depth development of higher nursing education teaching reform

Traditional higher nursing education has certain limitations in teaching philosophy, teaching methods, and teaching evaluation, making it difficult to adapt to the development needs of nursing education in the new era. The introduction of smart teaching provides new ideas and methods for the teaching reform of higher nursing education, prompting educators to update their teaching philosophy, innovate teaching modes, optimize the teaching process, and improve teaching quality. At the same time, smart teaching helps to strengthen the close integration of nursing education and clinical practice, cultivate students' practical abilities and problem-solving abilities, and promote the in-depth development of higher nursing education teaching reform.

3. Problems in current higher nursing education

3.1. Relatively lagging teaching philosophy

Some higher nursing educators are still bound by traditional educational concepts, focusing too much on imparting knowledge while ignoring the cultivation of students' comprehensive qualities and abilities. In the teaching process, the teacher-centered teaching mode dominates, and the student's subject status is not fully reflected, which is not conducive to cultivating students' innovative thinking and independent learning abilities. Currently, relevant scholars have conducted questionnaire surveys and found that nursing undergraduates' evidence-based practice is at a moderate level of impairment, and the overall level of evidence-based practice ability needs to be improved ^[1].

3.2. Single teaching mode

Currently, the teaching mode of higher nursing education mainly focuses on classroom instruction, and the practical teaching links are relatively weak. In the classroom instruction process, the teaching method is relatively single, mostly adopting the “full-house irrigation” method, which lacks interaction and interest ^[2]. In terms of practical teaching, although there are clinical internships and other links, due to the limited number of internship bases and uneven teaching quality, students’ practical opportunities and effects are affected, causing higher nursing education to face the dilemma of clinical practice teaching being out of touch. In addition, the application of information technology in the teaching process is not sufficient, and the advantages of smart teaching are not effectively utilized, resulting in a serious phenomenon of superficial application of digital technology.

3.3. Insufficient teaching resources and inadequate integration and utilization

The teaching resources required for higher nursing education include textbooks, courseware, training equipment, clinical cases, etc. However, currently, some universities have insufficient nursing teaching resources. For example, the content of textbooks is not updated promptly and is out of touch with clinical practice; training equipment is outdated and limited in quantity, which cannot meet students’ practical needs; clinical case resources lack systematic structure and diversity. At the same time, some universities do not fully integrate and utilize existing teaching resources, and resource sharing is lacking ^[3]. Different types of teaching resources have not formed an effective synergistic effect, affecting the improvement of higher nursing teaching quality.

3.4. Poor information literacy of the teaching team

The implementation of smart teaching requires teachers to have high information literacy and be able to skillfully use information technology tools to carry out teaching activities. However, currently, the information literacy of some higher nursing education teachers cannot meet the requirements of smart teaching. There are problems such as insufficient awareness of smart teaching, insufficient information technology application ability, and insufficient integration depth of teaching design and information technology ^[4], which restrict the promotion and application of smart teaching in higher nursing education to a certain extent.

3.5. Imperfect teaching evaluation system

The current higher nursing education teaching evaluation system mainly uses examination scores as the main evaluation index, focusing on the assessment of students’ knowledge mastery, while ignoring the evaluation of students’ abilities, qualities, and learning processes ^[5]. The evaluation method is relatively single, lacking diversified evaluation subjects and evaluation methods, which cannot fully and objectively reflect students’ learning situation and teachers’ teaching effects, which is not conducive to motivating students’ learning and teachers’ teaching improvement.

4. Innovative paths for higher nursing education in the context of smart teaching

4.1. Updating teaching philosophy to achieve collaborative education of knowledge, ability, and moral education

4.1.1. Emphasizing the student’s subject status

Higher nursing education practitioners should fully recognize that students are the subject of learning. In the teaching process, they should respect students’ differences and learning needs, encourage students to actively

participate in classroom teaching activities, and cultivate students' independent learning abilities and innovative thinking. For example, teaching methods such as Problem-Based Learning and Case-Based Learning can be adopted to guide students to think independently, analyze, and solve problems, improving students' learning enthusiasm and initiative. Updating teaching philosophy involves shifting from the traditional teacher-centered "spoon-feeding" approach to a student-centered approach. Furthermore, it is essential to focus on cultivating practical abilities with job competency as the orientation, assisting nursing students in transitioning from theory to practice ^[6].

4.1.2. Cultivating students' comprehensive qualities

Higher nursing education should not only focus on imparting professional knowledge and skills to students but also pay attention to cultivating their comprehensive qualities, including communication skills, team collaboration skills, critical thinking skills, and information literacy. Through diversified teaching activities and practical projects, such as group discussions, role-playing, and clinical practice, students' teamwork and practical abilities can be improved ^[7]. It is important to strengthen students' transition from simply acquiring knowledge to understanding and mastering new knowledge, broadening learning boundaries, and allowing students to enjoy a sense of accomplishment in acquiring knowledge. This comprehensive approach aims to fully enhance students' overall qualities, subtly guide their values, and prepare them to become compound nursing talents who meet the needs of the new era.

4.2. Innovating teaching modes and constructing a smart teaching system

4.2.1. Online and offline hybrid teaching mode

Universities can guide teachers to organically combine online and offline teaching by constructing a smart teaching cloud platform ^[8]. Online teaching can provide a wealth of learning resources, such as teaching videos, electronic textbooks, and online tests, allowing students to learn independently based on their learning progress and needs. Offline teaching, on the other hand, focuses on classroom interaction, nursing practice operations, and group discussions. Teachers can address questions and provide guidance on issues encountered during online learning, instructing students in nursing practice operations and promoting their understanding and mastery of nursing knowledge. For example, in basic nursing course teaching, teachers can use online platforms like "School Cloud" to release knowledge reserves, key and difficult points of the classroom, pre-class preparation, and related ideological and political elements that students need to master before class. This allows students to autonomously learn relevant knowledge before class. In the classroom, combined with the "School Cloud" and other network platforms, teachers can organize students to conduct practical operations and group discussions to consolidate their learned nursing knowledge and improve their practical abilities.

4.2.2. Virtual Reality (VR)/Augmented Reality (AR) teaching mode

With the help of VR/AR technology, teachers can create realistic clinical scenarios for students, enabling them to practice nursing operations and clinical practices in a virtual environment ^[9,10]. This breaks through time and space limitations, providing students with more practical opportunities while avoiding potential risks in a real clinical setting. It explores and fully unleashes the educational potential of technology ^[11]. For example, using VR technology to develop a nursing training simulation system, students can practice nursing operations such as intravenous puncture and catheterization in virtual scenes. The system provides real-time feedback on students' operations, points out problems, and gives guidance, effectively improving students' operational skills

and abilities to respond to clinical situations.

4.3. Optimizing teaching resources and achieving co-construction and sharing of teaching resources

4.3.1. Developing high-quality digital and intelligent teaching resources

Universities should increase investment in the construction of nursing teaching resources, encourage teachers to establish smart teaching resource libraries^[12], and develop high-quality digital and intelligent teaching resources, such as quality courses, online open courses, teaching case libraries, and virtual simulation experiment teaching projects. Digital and intelligent teaching resources should be rich in content, diverse in form, and timely updated to meet the diverse learning needs of students. For example, teachers can be guided to record teaching videos for core courses in nursing, create vivid animations and courseware, and develop a teaching case library based on actual clinical cases to provide students with abundant learning materials.

4.3.2. Establishing a digital and intelligent teaching resource-sharing platform

By establishing a digital and intelligent teaching resource-sharing platform between universities and enterprises, the co-construction and sharing of high-quality digital and intelligent teaching resources for higher nursing education can be achieved. Firstly, different universities can share digital and intelligent teaching resources, learn from each other's teaching experiences, and improve teaching quality. Simultaneously, universities should strengthen cooperation with medical institutions, sharing resources such as clinical cases and internship bases to promote the close integration of nursing education and clinical practice. For example, a regional alliance for the sharing of digital and intelligent teaching resources in higher nursing education can be established. Member universities can share resources such as online courses, teaching cases, and training equipment, jointly conducting teacher training and teaching research activities.

4.4. Strengthening the construction of teaching faculty and enhancing teachers' digital intelligence teaching abilities

4.4.1. Carrying out AI-enabled smart teaching training

Universities should invite educational technology experts through a combination of online and offline methods and regularly encourage teachers to participate in AI-enabled smart teaching training (such as special lectures on digital intelligence nursing teaching), to improve teachers' digital technology application abilities and intelligent teaching design levels. The training content can include educational technology theory, multimedia courseware production, network teaching platform application, virtual reality technology application, and other aspects. Through training, teachers can master advanced digital intelligence technology and effectively apply it to nursing teaching practice. Additionally, universities can establish a smart teaching exchange platform for teachers to learn from each other and improve their digital intelligence teaching abilities^[13]. At the same time, they can also organize smart teaching skill competitions for teachers to participate in to promote learning and teaching through competition.

4.4.2. Encouraging teachers to carry out smart teaching research and reform

Universities should increase financial support for smart teaching reform projects, support teachers in conducting teaching research and reform projects based on AI-enabled smart nursing education, and explore new teaching models and methods suitable for higher nursing education. Through teaching research, they can continuously sum up experience, improve the teaching process, and enhance teaching quality. Simultaneously, teachers'

teaching research achievements should be included in the performance appraisal system to motivate teachers to actively participate in smart teaching research and reform. For example, establishing university-level smart teaching reform research projects, encouraging teachers to apply for related topics based on smart teaching, and providing certain financial support.

4.5. Improving the teaching evaluation system to promote continuous improvement of teaching quality

4.5.1. Establishing a diversified evaluation index system

The teaching evaluation of higher nursing education should comprehensively consider students' knowledge mastery, ability level, learning attitude, innovative thinking, and other aspects, establishing a diversified evaluation index system. For example, adopting a combination of regular grades (including attendance, classroom performance, online assignments), process grades (group projects, practical demonstrations), and final exam grades, focusing on evaluating students' learning processes. Additionally, the evaluation methods of higher nursing education should be diversified, including teacher evaluation, student self-evaluation, peer evaluation, and clinical internship unit evaluation. For instance, constructing and optimizing Mini-CEX (Mini-Clinical Evaluation Exercise) ^[14]. In clinical internship teaching evaluation, apart from teacher evaluation, internship hospital instructors and patients can be invited to evaluate students, comprehensively understanding students' internship performance through various evaluation results.

4.5.2. Utilizing big data for teaching evaluation and analysis

In higher nursing education, teachers can collect and analyze students' learning data, such as learning time, learning path, homework completion, and exam scores, with the help of big data technology, providing objective evidence for teaching evaluation. Through analyzing big data, teachers can understand students' learning characteristics and needs, discover problems in the teaching process, adjust teaching strategies on time, and achieve continuous improvement of teaching quality. For example, by analyzing students' learning data using a learning management system, teachers can identify students' learning difficulties in a certain knowledge point and provide targeted explanations and guidance to improve the effectiveness of nursing teaching and promote the integrated practice of "teaching, learning, and evaluation" ^[15].

5. Conclusion

In the context of smart teaching, higher nursing education faces unprecedented opportunities and challenges. A series of innovative pathways, such as updating teaching philosophies, innovating teaching models, optimizing teaching resources, strengthening the construction of teaching faculty, and improving the teaching evaluation system, can effectively enhance the quality of higher nursing education and cultivate high-quality nursing talents who meet the needs of the new era. The application of smart teaching in higher nursing education is still in the exploratory stage, requiring continuous practice and exploration by educators, summing up experience, addressing problems at different stages of nursing education, promoting the intelligent and modern development of higher nursing education, providing strong talent support for the development of the nursing industry, and making greater contributions to promoting healthy China.

Disclosure statement

The authors declare no conflict of interest.

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