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Accelerate the Development of Media Integration and Build a New Model of "One–Three–Five" Human Anatomy Teaching

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Abstract. Human anatomy is the foundation of medical education. Comprehensive mastering of anatomy allows medical students to focus on their follow-up courses in greater depth. This teaching reform implements the spirit of service teaching and "red education". The construction of a network-based platform for human structure-rich media resources aims to promote the concept of "all-media teaching" and implement a hybrid teaching approach that combines guidance and learning in anatomy education. This mode develops a new teaching technique of "one center, three carriers, five integration" which promotes the pattern of medical education, and enhances the quality of education and teaching.

Keywords. Media convergence, Blended teaching, Teaching pattern

1. Introduction

With the rapid advancement of the information age, China's media integration is gradually catching up with the speed of global attention. How to promote and apply media integration in university education and teaching is also a concern of many scientists. The author's responsibilities as an anatomy instructor include teaching Systematic Anatomy, a discipline that investigates the form and shape of a normal human body, which are the fundamental cornerstone of basic and clinical medicine. During our teaching, the course encountered the following problems: a) The contents of anatomy are numerous and challenging to comprehend, b) The teaching hours of anatomy have decreased in recent years, c) Insufficient resources for teaching cadavers, d) It is impossible to convey all the content to the students with only a limited number of classroom hours. How to encourage the integration and development of media so that students can acquire sufficient anatomical knowledge in the shortest possible time and combine clinical experience to improve teaching quality is a problem that anatomy professors are thinking about.

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2. Methods

2.1. The "One centre" embodies the purpose of reform

BioMed Central (BMC) medical education offers the ability to establish a student-centred, more active learning environment as compared to traditional classroom instruction. Flipped classrooms are expected to create a more student-centred, active learning environment than traditional lectures [1]. As a result, we integrate the scattered teaching resources into the human anatomy and develop a platform of human anatomy based on web value-added services, and innovate the hybrid teaching (guidance) + learning mode applied to online self-learning + offline flipped classroom. It will shift from teacher-centred to student-centred education, and from student needs to enhance students' internalization of information, the realization of application and analysis of learning goals, and embodiment of students' pivotal position.

2.2. The "three carriers" laid the foundation for reform

2.2.1. Media of resources

High-quality human anatomy video public course, including the cardiovascular system, respiratory system, digestive system, lymphatic system, brachial plexus system, etc. is completed with the help of various teaching media, such as color pictures, models, specimens, and living bodies. The video content is open, interactive, authentic and vivid, combined with clinical practice, reflecting the consolidation of knowledge, ability, and accomplishment. At the same time, the clear and detailed explanation procedure can stimulate students' thinking. Topics such as the digestive system, respiratory system, lymphatic system, nervous system, embryonic development, and more will be added to the videos as part of later instructional updates. The development and construction of "Innovative Nursing Clinical Applied Anatomy Micro Courses" and "Clinical Applied Anatomy Micro Courses Development of Peripheral Nerve Injury" are major innovative items, aiming to offer a series of courses with exquisite teaching design and highly targeted content. Create strong independence. On this foundation, online open courses will be developed to increase students' capacity to apply fundamental knowledge to the clinic. This course uses HTML5 technology to decompose the general anatomy of "Systematic Anatomy" into 38 elements. Through the technical process of "resource integration → course material production → innovation speed lesson → online platform," various forms, of course, the integration of materials, realizing the organic combination of text, image, shape, audio, and video, interaction, color, are creativity, break the traditional "cramming, cramming" teaching mode, greatly improves students' interest in learning. Simultaneously, based on Courseware for rapid mobile learning allows teachers to interact with students in real-time outside the classroom, allowing students to learn in real-time [2, 3].

Historically, donor dissection (or specimen-based dissection) has been considered the gold standard of gross anatomy intensive training [4]. The anatomical structure is extremely important for students to understand. On the other hand, anatomical specimens are faced with problems such as scarce sources, high purchase prices, strong irritating odor, etc. Therefore, the team achieved the best results by "image acquisition and beautification → structure identification → answer → generate QR code → upload to website" Specimen achieves optimal results [5], enabling images that facilitate

resource sharing. To help students learn better, the teacher uses photography to photograph fresh specimens from the anatomy lab and the Human Life Science Museum, as well as nearly 400 clear object color maps arranged in two parts of the sequence, made of the Human Anatomy, according to the Systematic Anatomy and Local Anatomy. To study the position, shape, structure, and adjacent relationship of the organs involved in a nursing clinical specialty, a new digital teaching material of Clinically Applied Anatomy was developed. Furthermore, the authors contributed to the development of "the 13th Five-Year" innovative planning textbook Nursing Anatomy and Histology and Embryology national digital curriculum planning textbook, which is rich in material and focused on developing students' ability and quality.

2.2.2. Diversity of teaching platforms

The authors make appropriate use of modern educational information technology to build an application system platform. To overcome the space-time limitations of traditional teaching and to diversify the teaching platform, the authors organize the teaching resources into several categories on the platform. The establishment of the teaching quality engineering website of human anatomy has laid the foundation for the development of networked and rollover classroom teaching in our school. The teacher will upload the completed high-quality video open class, Micro class, online open class, speed class, and other classes to the Super-Star Learning Platform, MOOC platform, and speed class platform to provide students with a fragmented time and systematic learning approach to achieve extensive online learning. WeChat public account platform, which has become one of the media forms for modern teenagers and students' communication and display, not only has the openness, immediacy, and interaction of a general network platform, but also has the characteristics of rapid content release, flexible communication, and brief content, among others. "Yao Qi Qi Hang," a WeChat public account created by the authors, occasionally publishes innovative teaching content for learners and peer teachers to learn and communicate and promote the development of education. With five display sections available to young people and the general public, the Guangdong Province Youth Science and Technology Education base-human Life Science Museum serves as a teaching, popular science, and scientific research center. Our college's Student Volunteer Service Team gives public talks on medical topics and engages in popular scientific initiatives. Through the propaganda model of "medical students as a social group," to a certain extent. The student Volunteer Service Team of the college performs different medical knowledge lectures and popular science activities for the public. The situation in which teenagers do not grasp and pay attention to medical information in compulsory education may be relieved to some extent through the advertising approach of "medical students–teens–social groups," and medical seeds can be sown in teenagers' hearts. It effectively guides people to develop a correct view of life and death, values, and world outlook strengthening the public's understanding of body donation eliminating the public's fear of body donation and promoting the development of the body donation cause [6]. To enable the seamless growth of interpretation instruction, the body donation platform accepts gross specimens. The digital anatomy laboratory is reformed based on the original anatomy laboratory by utilizing contemporary information technology to satisfy the needs of anatomy experimental teaching while also realizing the digitalization and individuation of teaching, self-study, and examination.

2.2.3. The politicization of the teaching curriculum

In his Philosophy of Osteopathy (1899), Andrew Taylor Still (1828‑1917) said, "You begin with anatomy, and you end with anatomy, a knowledge of anatomy is all you want or need." [7] However, we receive not only information in anatomy lessons, but also direction on how to uncover the beauty of the human body and the selfless commitment of the gross specimen. This course's experimental goal is the human body. The study of medicine cannot be separated from students' anatomy and observation. With "Mute Teacher" as the carrier, ideological and political education was integrated at the beginning of a medical career. Our institution, as one of the earliest units of the Red Medicine Federation of China, has inherited the spirit of "red medicine" and fashioned the character of "red medicine," that is, to practice the spirit of "red medicine," to fulfil the social duty, and to serve social development [8]. With the assistance of these two carriers, the team will investigate the special elements of ideological and political education in the teaching of specialized courses, formulate the teaching objectives of specialized courses, and promote the integration of ideological and political teaching materials in the courses, enter classrooms and enter students' minds, and pay special attention to strengthening the education of medical ethics and benevolence of doctors. While consolidating basic medical knowledge, guiding students to strengthen their belief in Marxism, strengthen their belief in socialism with Chinese characteristics, and build up their confidence in the Chinese Dream, we should also lay a solid scientific ideological foundation for the growth and development of young medical students, cultivate their doctor's heart, prioritize the people's health and safety, and be a good doctor trusted by the party and the people.

2.3. Deepening reform through the five-pronged approach

2.3.1. Integration of modern information technology and traditional teaching

Systematic anatomy teaching not only pays attention to what students "learn" and how to "learn" but also to what teachers "teach" and how to "teach." From the perspective of students, combined with the talent training program of our school, teachers apply the mixed teaching model based on the flipped classroom to some courses. The use of information technology to provide online resources to aid learning is to employ abstract and unintelligible stuff. Traditional teaching approaches are also used in the classroom. The organic integration of information technology and conventional teaching, as well as the enrichment of creative teaching linkages, enhance the effective implementation of the classroom teaching aim.

2.3.2. Integration of online autonomous learning and offline rollover

During the online self-learning process, teachers upload learning materials (textbooks, videos, courseware, homework, reference materials, etc.) to different learning modules on the Chaoxing Education Platform [9-10]. Combining anatomy learning websites with MOOCs and other resources can effectively teach students step-by-step. The online communication platform can also be used for teacher-student communication. The platform for online communication may also be used to communicate between teachers and students. Rich image of teaching materials to satisfy students' needs for diverse knowledge points of tailored learning, and increase students' capacity to study independently. When students are learned in a flipped classroom, their comprehension

of the classroom material leads students to become active participants [11]. The offline flipped classroom implements the concept of "student-centred". According to Bloom's teaching objectives, teachers perform practical tasks ranging from easy to unmanageable, such as online feedback, pre-class question and answer, communication and interaction, performance demonstration, application analysis, and class summary. Carry out classification design. To fully activate the classroom atmosphere and stimulate students' enthusiasm for learning. Based on a study of the data supplied online, questions that cannot be resolved through online conversation can be directly expressed in the form of a "Word Cloud," which is debated by instructors and students, concentrating on the key and difficult topics to explain. The pre-class quiz is based on the experiment feedback and the online quiz setting. The teacher makes use of the physical samples and other quizzes. Students scan the QR code or learn to answer the questions quickly. Simultaneously, they are given corresponding instructions, to analyze the student's mastery of knowledge points. In the form of individual or group cooperation, students summarize the key points of online independent study and communicate with other students on stage. Alternatively, the teacher assigns thinking questions about related diseases ahead of time, and a group representative comes to the stage to report the anatomy knowledge involved in class, to improve the interaction between students or teachers and students, and to cultivate students' ability of self-induction and summary. Based on communication and interaction, combined with the relevant teaching content of this course, design application analysis questions, let students combine the knowledge of physics, chemistry, biology, anatomy and other basics, think about aetiology and pathology, and use the knowledge of human body structure to describe clinical problems. For example, why should a baffle be placed on the sole when nursing a bedridden patient with a common peroneal nerve injury? Alternatively, you can choose some clinical courses that are "Rediscover" for students. For example, design the injection sites of cerebrospinal fluid and bone marrow, suggesting weak groin enhancement schemes, select kidney transplantation sites, etc. This is not only a revolutionary education, but also a process of nurturing patients.

After class, students can review teaching courseware through the platform, watch teaching videos, do online homework, and so on, as well as address any questions they may have. After class, the teacher will report the results and performance of the students through the Internet or before the next class [12]. Under this teaching model, students participate in group discussions of clinical cases, show the results of independent cooperative design, simulate operation, and so on, to gain a deep understanding of the relationship between knowledge points and improve learning efficiency by asking questions, seeking answers, solving problems, and reflecting on feedback.

2.3.3. Integration of summative assessment and formative assessment

The assessment methods of course learning are mainly formative assessment and summative assessment, and the assessment ratio is 1:1 [13]. The final exam is the final written exam, which mainly examines the students' mastery of the knowledge points. Carry forward the academic spirit of the university. Formative evaluation includes learning platform data analysis, experiment result analysis, teachers' evaluation of students' teaching performance, practical ability, teamwork ability and students' innovative consciousness. Encourage positive two-way feedback throughout the

teaching process, including change, correction, refinement and continuous instructional improvement.

2.3.4. Integration of ideological and political elements with professional curriculum

In the stage of knowledge "study" we should dig the ideological and political elements of the curriculum into the teaching materials, in the stage of "study" into the ideological and political elements of the curriculum into the mind, and in the stage of "use" to promote the ideological and political elements of the curriculum into action. This session will teach you about the philosophy of human remains donation, including the concept, rules, and fundamental facts regarding human remains donation, among other things. Through the experience of the old generation of anatomy teachers in our school and the stories of the body donors, we can guide the students into the special teacher of medicine, the "General Teacher," and into the heart of the body donors, let the students ask themselves, "what should we do?" The first lesson in human anatomy is to logically assess what makes sense and choose the appropriate story at the insertion point. When teachers help students identify the skeletal muscle signals of teachers and students, they guide students to have a pair of eyes to discover the beauty, scientifically understand the aesthetic value of the human body, create correct aesthetics and develop a world view. When carrying out the teaching activities of gastric tube insertion, students are needed to move slowly and gently, to cultivate students' ability to think for patients and take other people's positions. When conducting catheterization or bladder puncture, they should soothe the patient's fear and embarrassment, describe properly and respect the patient's privacy, improving humanistic care. Throughout the teaching process, we focus not only on developing students' exceptional clinical nursing abilities but also on developing students' spirit of not being scared of difficulty and exhaustion, therefore boosting the moral quality of the nursing profession.

2.3.5. Integration of classroom activities with out-of-school practices

The practice of medicine is a significant part of the professional practice of medical students. We encourage students to actively participate in classroom activities but also arrange for children to participate in hands-on activities outside the school. Teachers send student representatives to funeral homes to attend the funerals of volunteer donors. Teachers promote medicine by giving students homework and sharing it with colleagues (friends and family). Teachers by assigning assignments for students to the people around them (friends and relatives) perform medical science popularization. Students used the knowledge and spirit of teaching to practice, such as the science popularization activities of Guangdong Province Youth Science and Technology Education Base−Human Life Science Museum, demonstrating cardiac compression, measuring blood pressure for family members, etc. Students are encouraged to take an active part in it and enhance their sense of social responsibility and sense of health service by participating in activities organized by the school to carry forward the spirit of "red medicine," such as going to the countryside three times, free medical consultation, voluntary service, and so on.

3. Limitations

Although the study was thorough and rigorous, the work does have some limitations. On the one hand, this study was conducted in a university in China, and since the medical education curriculum is different in each country, the research method may not generalize well to different educational backgrounds. On the other hand, this article mainly talks about the reform of the teaching system, which is only a preliminary implementation at present, and there is no relevant data survey for the time being. But we believe that with the deepening of practice, the advantages of this teaching system can be validated by relevant data.

4. Conclusions

Using information technology and the Internet platform, instructors created a teaching resource system comprising high-quality courses, digital specimens, and anatomical atlases, as well as a high-quality interschool information-based teaching resource-sharing platform [14, 15]. The authors have built a new pattern of anatomy teaching with “one centre, three carriers, and five fusions” which will successfully ease the shortage of teachers and teaching resources. And help students to form a complete medical knowledge system and improve their ability to independent learning and innovation. The authors fully utilize its subjective initiative to boost both the core medical quality and the comprehensive application ability of students. To contribute to the cause of medical personnel education in China, raise the level of education and teaching, as well as the quality of first-class personnel training.

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