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Innovative Practice of Integrated Socratic and Seminar Teaching Method in Basic Medical Teaching of Nursing Specialty

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Abstract: Objective: to study the Socratic method of teaching and Seminar teaching method in nursing professional basic medical teaching practice and the effect is discussed. Results: The scores of the experimental group were significantly higher than those of the control group (90.7±5.0 vs. 86.5±3.8; T = 3.1, P = 0.016); The scores of basic theory (78.5±6.4vs.77.5±3.1; t = 2.291, P = 0.048), paper score (92.0±5.0 vs. 80.0±5.0; t = 2.021, P = 0.018) were better than the control group, especially in the topic selection and writing level, the experimental group was significantly higher.

Keywords: Socratic teaching method;Seminar; Basic medical courses; Nursing professional teaching

Introduce

Many paradigms of active teach-ing/learning methodologies have been adopted in both
Eastern and Western medical education systems, some of which are used partially (actual or conceptual similar) Socratic questioning to challenge students' critical think-ing. In this regard, the primary philosophy of case-based learning (CBL) established in the 1920s by Harvard Med-ical School is to guide students to apply their acquired knowledge base via critical thinking to make clinical decisions to solve the problems that they may encoun-ter in the healthcare environment (Behar-Horenstein et al, 2015). In basic medical courses for nursing students, there is often a problem of heavy theory with light practice. Most teachers tend to rely on spoon-feeding education and traditional interpretation methods, which can make it difficult for nursing students to memorize, understand, and apply knowledge effectively. This situation presents certain obstacles and difficulties for students. Education is a crucial source of innovation, and innovative teaching methods can provide students with a more profound and comprehensive learning experience that stimulates their creativity and independent thinking abilities. Therefore, it is important to explore alternative approaches to nursing education that balance theoretical knowledge with practical application, and foster critical thinking and problem-solving skills. By doing so, we can better prepare students to meet the challenges of the healthcare industry and provide high-quality care to patients.

To better the innovation of the practice education method, we draw lessons from Socrates' education methods and Seminar education method, and further meet the needs of the basic medical teaching task and teaching curriculum innovation practice, by random grouping and to the teaching effect of 120 escort of science majors.

1. Subjects and Methods

1.1 Subjects

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From September 2022 to July 2023, 120 freshmen students in the Department of Nursing of Hope College of Southwest Jiaotong University were selected as the research objects.

1.2 Methods

Firstly, students were randomly divided into control group and experimental group. 59 people among them, the control group, experimental group of 61 people. The research is mainly basic medical evaluation of human anatomy and physiology teaching effect. The two groups of students in the above disciplines are required to review and preview after class. In the course of teaching, the two groups adopted different teaching methods. The students in the control group continued the traditional teaching method, that is, the introduction, analysis, identification and review of concepts were completed directly to all students in a fixed classroom within a limited time through the method of explanation, and multimedia and other methods were used to assist teachers to complete the teaching tasks(He & He, 2019).Therefore, we divided 61 people in the control group into 8 discussion groups, and arranged one teacher in each group as the tutor of the discussion group, responsible for the research guidance of each group. When teaching, the Socratic teaching method is used.Socratic questioning provides students with the opportunity to justify their own preconceived beliefs and thoughts after a series of specific, targeted inquiries(Paul et al, 1997). Using Socratic questioning can also assist health-care students, interns, or residents in thinking critically by understanding the“deep structure”of the question,i.e., deconstructing the question and understanding its true meaning(Oyler & Romanelli ,2014).During class, the students were required to exertconsiderable mental effort to conduct an inquiry to solve the learning sheet questions. Instead of providing students with clues or information to help them solve the problems, the teacher guided the PS students on how to seek the information they needed for themselves. The question for the PS students was be ‘What are the possibly executable strategies?’ The teacher also joined the students in discussion, using the Socratic method to stimulate critical thinking and draw out ideas and underlying suppositions. In high-quality cooperative argumentative dialogue, teacher should not direct or refer learning, nor should they ask students for the correct answers as in a traditional classroom.For example, when explaining the concept of physiological blood groups, by asking "why can't different types of blood be infused into each other?" Then, students were asked to discuss in groups, and try to retrieve relevant knowledge and solve these problems by themselves. In case of inconsistent conclusions and unreasonable explanations, tutors would guide them to ask questions to gradually understand and stimulate students' further thinking and creativity.

The students in the control group were guided not only toward the devel-opment of critical thinking skills but also toward solving problems using evidence-based knowledge and decision-making skills. The Socratic method process meets the student where they are on the educational spectrum and encourages and helps them advance. Using this method,the students engaged in student-to-student inter-action to build knowledge as a group and individually.The course of five experiments conducted via the learning sheets improved many aspects of the students’ critical thinking, including their clarity, relevance, breadth,and logic.After the implementation of the above teaching methods for comparative observation, the two groups of students were assessed, including practical training level results, basic theory results (written examination paper results) and innovation ability level (paper writing).

1.3 Teaching effect evaluation

In physiology, for example, the teaching effect evaluation is divided into training level grades (perfect score 100 points) experiments, the basic theory achievements (written out of 100 points) and the innovation ability level (paper assessment 100 points). The scores of training level included blood pressure measurement (20 points), heart sound auscultation (20 points) and blood type inference experimental design (60 points). The content of the

written examination was in the form of single choice questions (40 points), multiple choice questions (10 points), filling in the blank questions (5 points), noun explanation (15 points), short answer questions (20 points) and case analysis questions (20 points), which assessed the basic medical knowledge such as cell electrophysiology, blood circulation, digestive and respiratory physiology. The thesis was designed by the students themselves, and comprehensively evaluated by two teachers, a general practitioner with senior professional title and a nurse in charge with intermediate professional title from the four dimensions of thesis topic selection (25 points), writing logic (25 points), argumentative basis (25 points) and writing format (25 points).

The experimental design approach utilized in the aforementioned projects has been developed with a high degree of statistical rigor and reliability in mind, resulting in an experimental methodology that ensures the accuracy and consistency of the results obtained. This approach employs a variety of techniques and methods that are specifically tailored to the unique requirements of each project, allowing for a more targeted and precise approach to experimental design that meets the assumptions and requirements of statistical inference.

1.4 Statistical analysis methods

SPSS 22.0 software was used to analyze the data. Shapiro-Wilk test was used to express the normality ($x \pm s$) of measurement data, and the measurement data that did not meet the normal distribution were expressed as the median (upper and lower quartile). Count data using frequency (percentage) said. The t test was used to compare the measurement data with normal distribution and homogeneity of variance between the two groups, and the Mann-Whitney U test was used to compare the measurement data with non-normal distribution or homogeneity of variance between the two groups. The comparison of count data using Pearson chi-square test or Fisher's exact test. $P < 0.05$ was considered statistically significant.

2 .Data results

2.1General Data

Choose between September 2022 and July 2023 at the university of southwest jiaotong university institute of hope nursing 120 grade one students. Among them, there were 59 patients in the control group, aged 18(17,19) years, 7 males (11.9%). There were 61 patients in the experimental group, aged 18(17,19) years, 10 males (16.4%). Between the two groups in age, sex and degree on the difference has no statistical significance ($P > 0.05$).

2.2Data comparison

There were statistically significant differences in the teaching effect between the two groups from the practical training level, basic theory score and innovation ability level. Experimental training level of students from the grade (90.7 vs. 5.0 mm to 86.5 + 3.8; $t = 3.1$, $P = 0.016$). The scores of basic theory (78.5±6.4vs.77.5±3.1; $t = 2.291$, $P = 0.048$), paper score (92.0±5.0 vs. 80.0±5.0; $t = 2.021$, $P = 0.018$) were better than the control group, especially in the topic selection and writing level, the experimental group was significantly higher.

3.Discussion

In medicine, critical thinking is required for managing and tolerating medical uncertainty, as well as solving professional problems and treating diseases.Socrates was a famous philosopher and educator in ancient Greece. Socrates does not advocate directly to students with knowledge, but like to adopt the way of dialogue or q&a to guide students to seek truth. Critical thinking is an indispensable skill in the field of medicine, as it enables medical professionals to manage and cope with medical uncertainty, solve complex problems, and provide effective treatment for diverse ailments. Medical practitioners must be able to analyze and evaluate complex medical information, integrate various data sources, and draw conclusions based on their findings. In this way, critical thinking is essential for making informed decisions, providing accurate diagnoses, and designing effective treatment plans.

Meanwhile, Socrates, the celebrated philosopher and educator from ancient Greece, was a proponent of a teaching method that was quite different from the traditional approach. Rather than simply imparting knowledge to his students, Socrates believed in guiding his pupils through a process of discovery and questioning, using dialogue and Q&A to encourage deeper reflection and critical thinking. By engaging students in this way, Socrates believed that they would be better equipped to grapple with complex ideas and concepts, and to develop a more nuanced understanding of the world around them.This approach to teaching was a departure from the traditional model, which often emphasized a separation between "teaching" and "learning." By encouraging dialogue and active participation, Socrates' teaching method helped to bridge this gap and foster a deeper understanding of the subject matter.Overall, critical thinking and unconventional teaching methods like Socrates' are crucial for promoting learning, creativity, and innovation in a variety of fields. Whether in medicine or other areas of knowledge, these skills and approaches can help individuals to navigate complex challenges and to develop a more nuanced understanding of the world around them.This teaching method makes up for the shortcomings of the separation between "teaching" and "learning" that may occur in the traditional teaching model. Not only spread knowledge itself, but also to impart knowledge of how to obtain knowledge(Friedrich, 2009).Only through a collaborative approach can students be led into scientific research, which is the real purpose of Seminar; They are nurseries for scientific research(Friedrich, 2009) .Thus, we aimed to train students to develop critical thinking by using learning sheets and teacherguidance based on Socratic and Seminar teaching method.Seminar changed the traditional teaching method under the students' learning mode and one-way passive to accept knowledge, advocate students through independent exploration under teacher's guidance to "discover", understand and use the scientific truth. In Seminar mode, teachers and students is the discoverer of the knowledge and the scientific truth, explorer, they are able to boldly on academic issues, some comments on each other are able to carry out academic schools of thought contend, equally free and relaxed atmosphere has been formed. For example, the easy way to determine blood type is to use standard serum titration. But if in an emergency situation, the lack of standard serum, blood blood to estimate the unknown type how to use the known type, which is in the traditional teaching method is difficult to let students practical considerations, and the knowledge content of mining. However, through the Socratian and Seminar teaching methods, students are more likely to think about the possibility of more knowledge through the teacher's leading questions and team discussion. So on the knowledge, use and innovation can be fully training.

By combining the above two methods, and adapting to the actual teaching, through practice and demonstration, the students in the experimental group were better than the control group in both basic theory and basic skills. In fact, this conclusion has also been confirmed in the teaching of other disciplines(Shi et al , 2015).A meta-analysis study of China’s dental education reported that the CBL was a practical pedagogical method across the Chinese dental education system (Dong et al , 2022). The results showed that the CBL method significantly increased knowledge scores,skill scores, comprehensive ability scores, and teach-ing satisfaction compared with the traditional lecture-based learning (LBL) mode in 2,356 dental students.The integrated use of the teaching method, can let students a deeper understanding of knowledge in the learning process, a more flexible use of knowledge, so as to get more creative inspiration. Cultivate students' critical thinking and creative thinking by asking questions and guiding students' thinking; At the same time, also can let students to participate in the learning process, let the student become the protagonist of learning, improve the students' subjectivity and participation; By allowing students to conduct their own exploration and research, students' creativity and independent

thinking ability are stimulated(Zheng et al, 2017) .Therefore, at the same time, the teaching method are used to avoid formalism, if to ask questions and ask questions, the students with a series of aggressive problems forced into a passive position, so no benefit to teaching(Gao, 2008). Understanding what we learn has been identified as thestarting point in the professional-development journey(Zhong & Cheng, 2021). Critical thinking is a vital skill that students need to develop in order to succeed in their academic and professional lives. While it might be possible to teach thinking and decision-making skills, it is important to recognize that these skills are not developed in a vacuum. In order to be successful, students need to be immersed in an environment that encourages critical thinking and provides them with the necessary tools and resources to develop these skills.

For science courses like basic medical courses, this means that students need to have a deep understanding of the subject matter. Abductive reasoning requires the ability to draw logical inferences based on incomplete information. In order to develop this skill, students need to have a strong foundation in the subject matter. This means that educators need to ensure that students understand the fundamental principles of the subject and are able to apply them in various contexts.However, simply understanding the subject matter is not enough. Students also need to be stimulated to think creatively and critically. This means that educators need to provide students with opportunities to apply their knowledge in real-world contexts. For example, educators can provide students with case studies or problems that require them to use their critical thinking skills to arrive at a solution.In addition, educators can also provide students with access to resources and tools that can help them develop their critical thinking skills. For example, educators can provide students with access to databases, websites, and other resources that can help them gather information and make informed decisions.Ultimately, developing critical thinking skills requires a collaborative effort between educators and students. Educators need to provide students with the necessary tools and resources, while students need to be motivated to learn and apply their knowledge in various contexts. By working together, educators and students can create an environment that fosters critical thinking and prepares students for success in their academic and professional lives.

Conclusion

It is widely recognized that the Socratic and Seminar teaching method, when applied to nursing students, can be highly effective in teaching basic medical courses. This method emphasizes the importance of the student's role in the learning process, thereby encouraging students to think critically and creatively. In contrast to traditional teaching methods, which tend to be more teacher-centered, the Socratic method places students at the center of the learning experience, allowing them to take ownership of their own education.

Research has shown that the Socratic and Seminar teaching method can lead to better teaching outcomes than traditional methods. This is because it is an interactive approach that encourages students to actively engage with the material, ask questions, and debate issues. This not only helps students to develop a deeper understanding of the subject matter, but it also helps to foster critical thinking and problem-solving skills that are essential for success in today's complex, rapidly-changing world.

Furthermore, the Socratic and Seminar teaching method is highly adaptable and can be applied to a wide range of subjects and contexts. It is particularly well-suited to teaching medical courses, as it requires students to engage with complex concepts and apply them to real-world situations. By encouraging students to think creatively and innovatively, the Socratic method can help to prepare them for the challenges of modern healthcare, where new technologies and treatment approaches are constantly emerging.

Given the benefits of the Socratic and Seminar teaching method, it is important that educators continue to explore and implement innovative

teaching strategies that can help students to succeed in today's ever-changing world. By placing students at the center of the learning experience and encouraging them to think critically and creatively, the Socratic method can help to create a new generation of healthcare professionals who are equipped with the knowledge, skills, and attitudes they need to succeed in their careers.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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