



Action Research on the Application of OBE Based Hybrid Teaching Mode of Basic Nursing

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Abstract: The quality of classroom teaching is a crucial element in the development of high-quality universities. Thus, improving the quality of classroom teaching is of great significance. Basic nursing is a core course in nursing specialty. This study explored the teaching effect of Basic Nursing under the guidance of the OBE concept, using the methodology of action research. A total of 100 subjects from the nursing school of Grade 2018 and 2019, aged 20-23 years in Shandong province, were surveyed with the effect of action research from September 2020 to December 2021. Three rounds of action research were carried out using observation, semi-structured interview, questionnaire, and other methods. Descriptive analysis and t-test were used to analyze the data. The study found that after three rounds of action research, the theoretical examination scores of the observation group were significantly improved ($P < 0.05$). Additionally, results-oriented learning ability, critical thinking ability, and teaching method evaluation were significantly improved ($P < 0.05$). Therefore, the OBE-based mixed teaching mode of Basic Nursing can improve the quality of classroom teaching and enhance the comprehensive ability of undergraduate nursing students. The study concludes that the curriculum design should be strengthened, students' learning initiative should be improved, and the curriculum evaluation system should be optimized to improve teaching quality and promote teaching informatization reform.

Keywords: OBE education concept, Basic Nursing, Mixed teaching, action research

Introduction

The Outline of China's Nursing Development Plan ^[1] (2021) pointed out that we should adhere to improving nursing services. To improve the quality of nursing and constantly improve the ability and professional level of nursing service. The improvement of nursing service and quality is closely related to the level of nursing education, which depends on the quality of classroom teaching. "40 items of higher education in the new era" ^[2] pointed out that we should promote the revolution of classroom teaching, actively promote mixed teaching and flipped classroom, constantly improve the quality of classroom teaching and improve the quality of education. So we select the proper classroom teaching methods according to the course conditions, scientifically design the course assessment content and methods according to the course characteristics, and constantly improve the quality of classroom teaching. Also, we actively guide students to self-management and learn actively, stimulate their desire for knowledge, improve their learning efficiency and enhance their ability to learn independently.

Basic Nursing is the core course of nursing specialty, which contains the basic theory, the basic knowledge and the basic skills of nursing. This course pays equal attention to both theory and skills. It is a compulsory subject for nurses' qualification certificate, and it plays a vital role in the formation of nursing students' professional quality ^[3]. Outcomes Based Education (OBE) is an education model based on learning output. It was proposed by American scholar Spady, also known as goal oriented education ^[4]. It is a method characterized by output orientation. It takes a series of measures to help students achieve their learning goals, and it also enables students to show their ability to think, question, research, decide and present ^[5]. Mixed teaching is a mixture method of "online"+"offline" teaching. Through the organic combination of the two forms of teaching organization, learners' learning can be led from shallow to deep and then to deep learning ^[6]. Action research was first proposed by American Collier in the 1930s and then it was applied to teaching. Generally, action research is divided into three stages: research judgment - feedback research-self participation research. Through constant researching, teachers can explore the effect of new teaching methods, and students will eventually improve their ability and learning

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effectiveness. Therefore, the purpose of this study was to investigate the effect of conduct action in the teaching of Basic Nursing, with a view to providing reference for relevant teaching reform.

Literature Review

(1)Current State of development

At present, nursing experts at home and abroad have also studied the evaluation system of applied undergraduate nursing talents training quality from different aspects. In the study, an Xiaoshu (2020) established an evaluation system for the quality of nursing personnel training in higher vocational colleges based on post competence, the evaluation index system is composed of 7 first-class indexes (namely, personality quality, knowledge understanding ability, core nursing ability, professional development ability, teaching and management, physical and mental quality, and nursing professional concern) , 21second-class indexes and 41 refined third-class indexes, however, due to the lack of a broader employer evaluation data, so not widely used. Wang Bo (2020) , has carried on the application-oriented university personnel training quality appraisal system research based on the OBE idea, pointed out the objective appraisal, pays attention to the individual appraisal, pays attention to the development appraisal, pays attention to the external appraisal, it is an important guarantee to improve the quality of talent cultivation to establish a feedback mechanism for tracking and evaluating the learning situation by stages, to evaluate teaching quality in an all-round way and to feed back information timely and effectively. However, this paper does not discuss the details and contents of the construction of the evaluation system of talent cultivation quality. Therefore, it is urgent to carry on the thorough analysis to the high vocational nursing personnel training quality appraisal system and construct the current needs of the high vocational nursing personnel training quality appraisal system.

(2)Development bottlenecks

Through consulting a large number of documents, it is found that at present, there are still many problems in the cultivation of talents in our applied undergraduate colleges and universities [5], among which the ratio of teachers to students remains high, the students' specialization is weak, their professionalism is not strong, and their practical ability is poor, the trained talents are out of touch with the actual needs of the society [6], the teaching idea of integration of theory and practice is difficult to carry out, and the lack of students' practical ability is the most important factor that impedes the improvement of the quality of talents training in application-oriented universities, the research on the evaluation system of professional training quality is aimed at the professional ability of nursing students in application-oriented universities [7], it is also an important measure to improve the quality of specialty training in application-oriented universities [8].

(3) The evaluation system of nursing professional training quality

By consulting China Hownet, there are 12 articles about nursing education under the OBE concept. Zhou Lirong (2020) , pointed out that the basic nursing practice teaching based on OBE concept has improved the efficiency of basic nursing practice, it has effectively trained the core ability and the clinical operation skill of the nursing students. Sun Shuiying (2020) , based on the concept of achievement-oriented education (OBE) , studied and constructed the training system of nursing professionals in higher vocational colleges, from revising the training program, reforming the teaching methods, reorganizing and optimizing the course contents. However, at present, there is no literature on the construction of quality evaluation system for applied undergraduate nursing talents based on the OBE concept, so this study is to study this issue, in order to improve the quality of nursing professional training and promote the development of nursing profession, an evaluation system of applied undergraduate nursing professional training quality was established.

Description of the Study Area and Research Subjects

This study was conducted in Jinan, Shandong Province. The nursing graduates and students from Shandong XieHe College were selected as the interview subjects.

Convenient sampling was used in this study, 100 undergraduate nursing students of grade2018 and2019 from H University were randomly selected as the research subjects, with grade 2018 nursing students as the control group, grade 2019 nursing students as the observation group, and it contains 84 girls and 16 boys in the control group; Aged 20-23 (22.1 ± 1.2) years old. There were 76 girls and 24 boys in the observation group, aged 21-22 (21.3 ± 1.1) years. There was no significant difference between the control group and the observation group in educational background, gender, age and other aspects ($P > 0.05$). This study had been approved by the Ethics Committee of my College.

Selection methods

(1)Control group. The grade 2018 undergraduate nursing students adopt the conventional teaching method, and the teachers conduct classroom teaching and practical training in accordance with the traditional teaching methods. After the teacher demonstrated the nursing skill, the students practiced in groups. The theoretical assessment was conducted in the form of pre-class tests and post-class tests. The skills was assessed according to the unified usage of the skill assessment scoring table of our college.

(2) Observation group. For grade 2019 undergraduate nursing students, the OBE based online and offline hybrid teaching mode was adopted. According to the plan action evaluation reflection cycle mode, three commonly used clinical nursing skills, namely aseptic technology, vital sign measurement and nasal feeding, were selected as the research contents to carry out three rounds of action research.

(3) The research methods were implemented as follows:

① Before class, the teachers of the curriculum team discussed together to determine the teaching objectives of the above three teaching contents according to the six levels of Bloom's teaching objectives. The formulation of teaching objectives was based on the OBE concept and highlighted the results orientation. We also perfected online teaching materials of Basic Nursing, such as course objectives, course design, teaching courseware, teaching videos, pre-test, post-test questions, test question bank, etc.

② One week before class, the instructor would release the preview task list online. The teacher released the learning task list, courseware and operation video of the teaching content on the learning platform, and specifies the preview requirements. Students were required to discuss and learn collectively according to the task list issued, and complete the task list preview requirements.

③ In the class, the students would take the online pre-test first, it aimed to understand the students' mastery of knowledge points involved in the learning task list. During offline teaching, the teacher reiterated the teaching objectives of this class again. During the teaching process, students should be fully motivated to learn and improve their participation in the classroom.

④ After class, online post-test would be conducted and group tasks would be released. The post-test questions mainly understood the degree to which students had mastered the theoretical knowledge involved in teaching; The group task required students to analyze the case given by the teacher, they should give corresponding nursing measures in combination with the specific situation of the patient in the case, and play the role in the designated situation, shoot videos after repeated drills, and upload the videos to the learning platform.

⑤ Feedback. The teacher would give feedback on the students' test results and the skill operation shown in the cosplay, find problems, and improve the quality of Classroom teaching. Through feedback, students could be made aware of their problems in theoretical assessment and skill attainment, and reflected on the problems. At last, they could improve their learning effect.

(4) According to the above research methods, the following action research was carried out:

① The first round of action research

Through literature review and interviewed with teachers and students, it is found that the traditional classroom teaching model and teaching design were not systematic enough, which was specifically shown in: the level of teaching goal setting was not clear, and some teaching goal design was not clear enough; The design of teaching content needed to be further optimized, and the integration of teaching resources was not perfect enough; The design of teaching activities was relatively rigid. Therefore, it was necessary to integrate the advantages of traditional classroom and online teaching. For the teacher, we should research and design online and offline hybrid classroom based on OBE concept.

In view of the above problems, the research plan was drawn up as follows: the teachers should follow Bloom's teaching goal design principles, and carry out mixed teaching design, Clarify the teaching objectives of aseptic technology, and form an integrated online and offline teaching objective system; Enrich teaching activities and design a teaching activity system that supported each other online and offline; improve students' learning initiative, design student activities, and thus it could fully reflect students' dominant position.

② The second round of action research

In the first round of action research, the teachers collectively discussed, set the teaching goals based on Bloom's teaching goal classification principle and OBE concept, scientifically and effectively organized the implementation of classroom activities, initially carried out online and offline hybrid classroom teaching, but there were problems such as insufficient student centered teaching activities.

In view of these above problems, the research plan was formulated as follows: the vital sign measurement technology was selected as the research content, the teaching design was based on the OBE concept, which fully reflected the principle of students as the main body and teachers as the leading teaching principle. With the goal of students' effective learning, we enriched online resources, developed teaching objectives, optimized teaching content, designed teaching activities, improved students' participation, reformed assessment and evaluation, and achieved the consistency of teaching, learning and evaluation. It truly reflected the dominant position of students.

③ The third round of action research

During the second round of action research, we designed the teaching activities scientifically, implemented the teaching activities standardized and effectively, fully mobilized students' enthusiasm for learning and reflected their dominant position, but the assessment and evaluation methods of curriculum content needed to be further optimized.

In view of these above problems, we formulated the research plan as follows: first of all ,we optimized the curriculum evaluation system and realized the "three all-around" evaluation system of all staff, the whole process and all directions. Namely, the evaluation subject was full, the evaluation process was full, and the evaluation content was comprehensive. We designed the proportion of formative assessment and summative assessment scientifically, which included items, weights, specific forms and requirements of online and offline assessments.

Valuation index

(1) Pre-test and post-test results and relevant skill assessment results.

The teachers of the course team would work together to prepare the pre-test and post-test questions for each round of action research involving the course content, 10 questions each tests, which were objective questions; After class, students were required to brainstorm the case situations in the task list issued by the teacher, play the assessment content, record the video after repeated drills and upload it to the learning platform, and the full score was 100. Both pre-test and post-test questions had standard answers, and the skill assessment had scoring criteria, which were formulated by all the teachers of the course team after collective discussion. The formulation of theoretical examination questions and skills assessment objectives in this part follows the OBE concept and was classified according to Bloom's teaching objectives. Though the assessment it reflected the center position of students and achievement orientation fully.

(2) The critical thinking ability of students.

This ability referred to the process in which nursing students could use their knowledge to collect data, analyze and judge the complex clinical situations they were in, and finally make correct clinical nursing decisions on the basis of continuous reflection. The core purpose of critical thinking was to help nurses reflect and choose correctly when facing various complex nursing phenomena and problems, and finally made nursing professional decisions that met the interests of the clients [6]. Critical thinking ability was necessary for clinical nursing post ability, and it was related to the future professional ability of nursing students, and also it was the key to improve nursing quality. Through consulting relevant literature, this study selected the Chinese version of CTDI-CV scale to evaluate the critical thinking of nursing students [7]. The validity and reliability of the scale were 0.89 and 0.93 respectively.

(3) The evaluation of teaching methods.

The evaluation questionnaire designed by the course team was used to evaluate the teaching methods. The questionnaire had been tested in reliability and validity and could be used. The questionnaire consisted of 16 items in five dimensions, such as learning initiative, classroom participation, team cooperation ability, professional identity, and role responsibilities. The Likert 5-level scoring method was used for scoring. Participants were given 1 point for selecting the “Very disapproval ” option, given 5 points for selecting the “very approval”option.

Statistical analysis

Excel 2000 was used to build the database. SPSS20.0 was used for data analysis. The scores of nursing students were measured data, which were described by ($\bar{x} \pm s$) and tested by t test; Differences were considered statistically significant when $P < 0.05$.

Estimation:

(1) General information

As we show in Table 1, we compared the gender, age, race and education background between the Observation group and the Control group. There were no statistical differences in gender, age, race and education background between them ($P > 0.05$). (Table 4)

Group	Observation group (n=100)	Control group (n=100)	P
Gender (male/female)	16/84	22.1 ± 1.2	0.815
Age ($\bar{x} \pm s$, year)	24/76	21.3 ± 1.1	0.563
Race (Han/The others)	90/10	88/12	0.639
Educational background (Summer /Spring College Entrance Examination)	75/25	78/22	0.752

Table 1 :General information

(2)Comparison of theoretical and technical achievements

As shown in Table 2,the results of pre-test, post-test and role playing skills of nursing students in the observation group were better than those in the control group.

Group	Pre test results	Post test results	Skill operation results
Observation group	92.76±2.04	93.52±1.98	93.44±3.03
control group	85.67±2.06	87.35±1.23	87.21±0.75
t	21.655	21.365	22.185
P	<0.05	<0.05	<0.05

Table 2: Comparison of scores of pre-test and post-test and skill operation (points, $\bar{x} \pm s$)

(3) Comparison of scores of students'critical thinking ability

The scores of the groups are shown in Table 3.The scores of seven dimensions of clinical critical thinking ability of nursing students in the observation group were better than those in the control group, among which the scores of critical thinking confidence, open mind, systematic capability, curiosity, cognitive maturity and truth seeking were statistically significant ($P<0.05$). (Table 3)

Critical Thinking Traits	Observation group (n=100)	Control group (n=100)	t	P
Critical Thinking Confidence	42.62±2.32	37.47±4.08	11.267	0.000
Open mind	42.35±2.26	39.01±1.98	10.032	0.000
Analytical ability	43.85±2.37	42.65±2.02	1.180	0.234
Systematic capability	42.74±2.34	39.23±3.08	8.854	0.000
curiosity	43.57±2.46	38.58±3.12	12.963	0.000
Cognitive maturity	43.35±2.14	37.89±3.63	11.638	0.000
Truth seeking	42.53±1.69	38.61±3.52	9.532	0.000

Table 3: Comparison of seven dimensions of critical thinking($\bar{x} \pm s$)

(4)Teaching evaluation score

The scores of five dimensions of teaching evaluation of nursing students in the observation group were better than those in the control group, and the differences were statistically significant. ($P<0.05$). (Table 4)

Teaching evaluation	Observation group (n=100)	control group (n=100)	t	P
Learning initiative	13.62±1.38	11.47±3.08	11.267	0.000
Class participation	12.3±2.65	11.01±2.98	10.032	0.000
Group cooperation ability	13.85±2.37	12.65±2.02	1.180	0.001
Professional identity	13.74±2.34	12.23±3.01	8.854	0.000
Role Responsibilities	13.78±2.46	12.13±3.12	12.963	0.000

Table 4 :Comparison of evaluation scores of teaching methods($\bar{x} \pm s$)

Results and Discussion

(1)The theoretical and skill test scores of the observation group were significantly improved

The application of online and offline hybrid teaching mode in Basic Nursing could improve students' participation in the classroom and improve the teaching effect [8]. The results of the study confirmed that the nursing students in the observation group had higher scores in pre-test (92.76±2.04), post-test (93.52±1.98) and skill operation (93.44±3.03) than those in the control group ($P<0.05$). This research result is consistent with the conclusion of Feng Dong and Cheng Hong [9]. It suggested that the application of mixed teaching in the teaching of Basic Nursing could improve the teaching effect of the course. On the basis of previous studies, the researcher designed teaching objectives according to Bloom's six levels of teaching objectives under the OBE concept, and conducted three rounds of action research using mixed teaching. The research results confirmed that the teaching model was more results oriented, and the goal setting was more prominent in the student's dominant position, with more ideal results.

(2)The observation group's critical thinking ability was significantly improved

The application of mixed teaching in Basic Nursing could improve the critical thinking ability of nursing students. The results showed that the scores of critical thinking confidence was (42.62±2.32), open mind was (42.35±2.26), systematic ability was(42.74±2.34), curiosity was (43.57±2.46), cognitive maturity was(43.35±2.14), and truth seeking was (42.53±1.69) .The scores of nursing students in the observation group were better than those in the control group. The difference between the two groups was statistically significant ($P<0.05$). The score of analysis ability was (43.85±2.37). Compared with the score of nursing students in the control group, $P>0.05$, it had no statistical significance. This suggested that students' problems analysis needed to be further improved. This research result was consistent with that of Tang Feng and Qian Yuanyuan [10]. It suggestde that the application of mixed teaching in the teaching of Basic Nursing could effectively improve the students' clinical critical thinking ability.

This research was based on OBE concept to implement mixed teaching in the course of Basic Nursing, and conduct three rounds of action research on aseptic technology, nasal feeding, and vital sign measurement. In the research, the cultivation of critical thinking was always regarded as an important teaching goal, and the critical thinking was the top priority from the setting of course teaching goals to the implementation and final evaluation link, because this ability was related to the comprehensive ability and future professional quality of nursing students. It was the key to improve nursing quality. The study confirmed that this teaching mode could effectively improve the critical thinking ability of nursing students.

(4) The teaching evaluation scores of the observation group improved significantly

The results showed that the nursing students in the observation group had better scores in learning initiative (13.62 ±1.38), class participation (12.35 ±2.65), group cooperation ability (13.85 ±2.37), professional identity (13.74 ±2.34), and role responsibility (13.78 ±2.46) than those in the control group. The difference between the two groups was statistically significant ($P<0.05$). The results of this study are consistent with those of Yang Weiling [10].It suggested that the application of OBE based hybrid teaching model in nursing teaching could improve students' teaching evaluation scores effectively.

The research was based on the OBE concept to conduct an action research on the implementation of hybrid teaching in Basic Nursing. After the first round of research, it was found that online teaching resources were relatively insufficient. During the second round of research, online teaching resources were optimized and supplemented to provide resource support for the implementation of hybrid teaching; After the second round of research, we found that the evaluation subject

was relatively single. In the third round, students were taken as the evaluation subject. We increased the proportion of mutual evaluation between students and students. After the third round of research, we found that the evaluation system needed to be further improved, which would be gradually supplemented and improved in the subsequent research. The research results confirmed that the teaching model could improve the teaching effect effectively, and it also could improve the students' critical thinking ability and enhance students' satisfaction.

Conclusions and suggestions

The results showed that the scores of theoretical scores and skill operation scores in the pre-test and post-test of nursing students in the observation group were higher than those in the control group ($P < 0.05$), and the scores of critical thinking ability and teaching evaluation of the observation group were higher than those of the control group ($P < 0.05$). The OBE based mixed teaching mode of Basic Nursing emphasizes the production oriented, but also attached importance to the teacher's curriculum design and guidance. Teachers should encourage students to think actively, learn actively, and participate in group discussions during the teaching process. In the process of skill training, nursing students could fully feel the feelings of patients, nurses, doctors, etc. This method could cultivate the students' learning initiative, enhance their team cooperation ability, clarify the role responsibility of nurses, and establish a sense of professional identity.

The research found that, the level of school informatization construction in the process of organizing and implementing the mixed teaching mode was the foundation. The ability of teachers to teach was the key. The students' active participation in learning was also important. Therefore, we should develop our strengths and circumvent our weaknesses. We also should further improve the classroom teaching effect and the quality of talent training from the following aspects.

(1) Strengthen the teachers' curriculum design and reflect OBE teaching philosophy

The design of effective teaching starts with the expected learning achievements as the goal. We always studies it as the basic framework structure, so as to design the detailed teaching sequence and teaching activities^[13]. Therefore, the teachers of the curriculum group should also conduct collective teaching and research, discuss teaching objectives, teaching difficulties, teaching methods, teaching steps and time allocation. It is suggested that the teaching objectives should be determined according to Bloom's classification of educational objectives. And the objectives should be elaborated from the cognitive field, emotional field, and action field. At the same time, the goal formulation should closely focus on the OBE concept and reflect the output orientation. And it enables students to define learning objectives to improve the goal achievement. The teachers should clarify the key and difficult points of teaching, and design the ideological and political education and innovative thinking training of the curriculum. The teachers should closely focus on the key and difficult points of teaching and reform teaching methods, make full use of online and offline teaching resources to carry out teaching reform and implement flipped classroom.

(2) Improve students' learning initiative and reflect students' dominant position

Students are the subject of learning. And they are constantly developing in the process of actively participating in learning activities^[14]. Students must acquire knowledge on the basis of active thinking. Either through accepting learning or through independent exploration. But students can not apply knowledge and gradually form skills without their own practice. In the process of acquiring knowledge and skills, students could develop their critical thinking, problem solving and emotional attitudes only when they fully participate in the teaching activities carefully designed by teachers. Therefore, during the teaching design, the teachers should give full consideration to the students' dominant position, try our best to enable students to participate in classroom activities. It can improve students' participation in the classroom through group discussion, role-playing, scene simulation and other methods. We can use heuristic teaching to promote the students' active thinking, improve the students' ability to use what they had learned to solve practical problems, and pay attention to the cultivation of critical thinking and the formation of professional quality. So that students can become the masters of the classroom. It truly reflects the dominant position of students.

(3) Build the "three guarantees" evaluation system to reflect the effect of feedback improvement

Teaching evaluation is a process of studying the value of teachers' teaching and students' learning. Only by establishing a scientific and reasonable teaching evaluation system and focusing on students' learning progress and dynamic development can it really play the role of a teaching baton^[15]. Therefore, a curriculum evaluation system should be established in combination with the course. In terms of evaluation subjects, more emphasis should be placed on students' self-evaluation. At the same time, students' mutual evaluation and teachers' evaluation should each take up a certain weight, fully reflecting the full membership of evaluation subjects. In terms of evaluation type, more attention should be paid to the implementation of formative evaluation, so that evaluation can run through the teaching and reflect the whole evaluation process. In terms of the evaluation content, it is more comprehensive and specific and combined with the post needs to make the evaluation content comprehensive. Through the teaching evaluation, the role of diagnosis and motivation could be fully played. Teachers can timely understand the actual situation of teaching behavior and feed back the evaluation results to students. So as to timely improve the deficiencies and improve the feedback.

To sum up, the application of OBE based hybrid teaching mode in Basic Nursing could effectively improve the quality of classroom teaching, enhance the comprehensive nursing ability, and improve the teaching quality, which is worthy of further promotion. The next step of our research would focus on the factors that affect the implementation of the mixed classroom model and the relationship between the factors, so as to conduct a more in-depth study.

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