

Exploration and application of ecological classroom teaching method in clinical practice teaching

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Abstract: *The ecological method is introduced into the clinical practice teaching of medical students. The theoretical basis of ecological classroom teaching method in clinical practice teaching is studied, and the problems generated in the practical application of ecological classroom are discussed to promote the application of the teaching method in clinical practice teaching. Teachers and students form ecological consciousness, take the classroom as the interaction of various ecological factors in the ecosphere, achieve the overall ecological balance, and finally improve students' ability to use knowledge to solve practical clinical problems.*

Keywords: *ecological classroom, clinical thinking ability, clinical teaching, ecological factors*

Education is agriculture, not industry. Education should be like growing a crop, which is allowed to grow naturally, not like industrial production, which is moulded into a single batch of mechanical products. Factors such as soil, fertilizer, sunlight, water and the inner vitality of seeds form a balanced ecological environment, so that crops can grow happily and freely. Drawing on the theories and methods of ecology to study the interaction and relationship between biological organisms and the surrounding environment, students are compared to crops. Different crops have different planting methods and need different fertilizers, sunlight, water and so on at each stage of growth. Education also needs to vary from person to person, according to their aptitude, and according to The Times. We should cultivate students like crops.

1. Background

Clinical practice is an important period of medical students' education and the only way for them to become doctors ^[1]. Through practice, students can further understand and master the etiology, pathogenesis, symptoms and signs, diagnosis and treatment of common clinical diseases, and establish and cultivate clinical thinking ability ^[2]. However, there are some problems in clinical practice teaching at present: the traditional classroom teaching model is teacher-centered and exam-oriented ^[3]. Based on the output of teachers' knowledge, "teachers speak and teachers ask" is a common form, which changes teaching into one-way indoctrination of knowledge and ignores the inspiration, guidance and humanistic care for students^[4]. Some students do not pay enough attention to some clinical departments or are not interested in some departments. In fact, there is a certain correlation between various medical departments. Some students learn new knowledge by rote and lose the ability of independent thinking, independent learning and the ability to explore the unknown and innovate. Short rotation time of single department, intern doctors just entered the clinic, unskilled operation and other reasons, leading to low trust of patients, few practice opportunities, cannot apply what they have learned. Traditional clinical education mostly adopts the final evaluation mode, which is often assessed at the end of rotation, with fewer times and one-sided results, which cannot form effective feedback and continuous improvement, and ignores the cultivation of students' ability to solve practical clinical problems with knowledge^[5]. These common problems make clinical teaching lack of due vitality, difficult to achieve the due purpose of teaching.

2. Ecological classroom

To analyze the clinical practice teaching of medical students from the perspective of ecology is

essentially to regard the clinical practice teaching as an ecosystem and deeply analyze the distribution of each component of the clinical practice teaching. Teaching ecology in clinical practice is the process, law and overall ecological balance of the interaction of various factors in clinical practice and teaching, as well as the thinking and value orientation of the interaction between various factors and environment. The change of ecological environment has an important impact on people's psychological state [6]. Medical students grow up in an ecological environment, and their thoughts, emotions and values are all influenced by the development of ecological environment [7]. The same is true of ecological classroom, which is reflected in the relationship between space and characters and environment. The background of each learning activity includes students, teachers, environment and learning materials, so learning takes place in an ecosystem [8]. In this system, the interaction and positive influence of various factors have formed a unique ecological classroom system [9].

The ecological classroom was first proposed by the American educator Waller in the *Sociology of Education* in 1932. The English term "ecology of classroom" refers to the study of classroom teaching with the method of ecology. Its core spirit is "system, balance and connection". Ecological classroom connects various elements as well as the whole classroom and the outside world in the way of overall correlation, dynamic balance and coordinated symbiosis to achieve the common development of teachers and students [10]. Ecological classroom is guided by ecological teaching concept, and regards teachers, students, learning content, teaching methods, classroom environment and learning evaluation as a teaching ecosystem. All factors are interrelated and influence each other. The teacher's professional competence is directly related to the amount of energy entering the classroom ecosystem, and the extent to which the energy really flows continuously and effectively. Students are the most important ecological factor in the ecological classroom and the teaching goal. We shape the classroom ecology so that all students have the opportunity to succeed in a student-centered environment [11]. Under the guidance of teachers and based on their own needs, students gradually participate in thinking about the significance of learning for their future career development, and solve the problem of "willing to learn". Only students take the initiative to study and explore, in order to give full play to their creativity. Learning content is the intermediary, bridge and link of energy, material and information flow between teachers and students, and is the information basis to keep the dynamic balance of the classroom ecosystem. Teachers can boldly choose teaching methods scientifically according to the characteristics of teaching content and requirements of teaching objectives, combined with the characteristics of students themselves, which is also very important in the construction of ecological curriculum in clinical practice [12]. Classroom environment includes humanistic and psychological environment, which mainly refers to teacher-student relationship, student relationship and their communication and interaction. As well as the warm and comfortable physical environment, the way and mode of seating fully reflect the richness and individuation. Finally, learning evaluation. Ecological teaching advocates process evaluation and developmental evaluation in the teaching process, which not only evaluates students' understanding and memory of what they have learned, but also evaluates their learning attitude, learning strategy and time performance, so as to provide timely feedback and adjustment.

3. Ecological classroom teaching method

Ecological classroom teaching method focuses on the research and application of teaching content, methods and modes, emphasizes people-oriented education and advocates healthy and sustainable development, which enables teachers to pay more attention to the development of students at different levels in a more comprehensive way, care for their learning emotions, and pay more attention to constantly improving their self-cultivation and their educational influence. Students can truly become the master of learning, fully show their personality, develop creative thinking, cultivate innovative consciousness, enhance innovative ability, and forge innovative personality [13]. The main characteristics of "ecological classroom" are teacher-student equality, student equality, natural harmony, independent cooperation, promoting teaching by learning, inquiry and generation, openness and choice, diversified evaluation methods and personality development. Ecological classroom is green classroom, harmony and balance is the fundamental characteristic. Human development is not only comprehensive and personalized, but also sustainable and lifelong. An ecological classroom full of life vitality should be created to fully stretch life [14].

To explore and construct ecological classroom teaching model and produce important value for clinical practice teaching. The practical operation method of establishing ecological classroom teaching model. Through the construction and application of ecological classroom teaching method, it promotes the continuous improvement of teachers' teaching concept and teaching method, and promotes the change of students' learning concept and method. Through reform to cultivate active exploration,

innovative teachers. Through reform, students' learning potential can be better developed and the efficiency of students' education process can be improved^[15]. Solve the main problems existing in clinical teaching: It is mainly to improve the one-way infusing teaching method existing in the current teaching. Teachers need to constantly optimize teaching methods, connect teachers with students through excellent teaching methods, and no longer treat students as machines passively receiving knowledge, but as important factors in the teaching process, stimulate students' learning initiative and enthusiasm, and strengthen the subject's sense of responsibility and pleasure.

4. Application of ecological classroom teaching method to practical clinical teaching

The living state and development trend of each factor in ecological classroom are maintained and changed by various ways. They depend on each other and influence each other to form a complete ecological classroom system. In the ecological classroom, the mutual learning and interaction between teachers and students form the ecological groups of teachers and students, and the ecological factors such as teaching content and teaching methods are formed. The ecological groups of teachers formulate teaching content, select different teaching methods according to different ecological groups of students, and give feedback to the ecological groups of teachers based on classroom responses and assessment results of the ecological groups of students^[16]. The relationship between each system is complex, but also influence each other, and each other. Ecological classroom is a complete, systematic, open, symbiotic, balanced and restricted unique ecosystem (Figure 1).

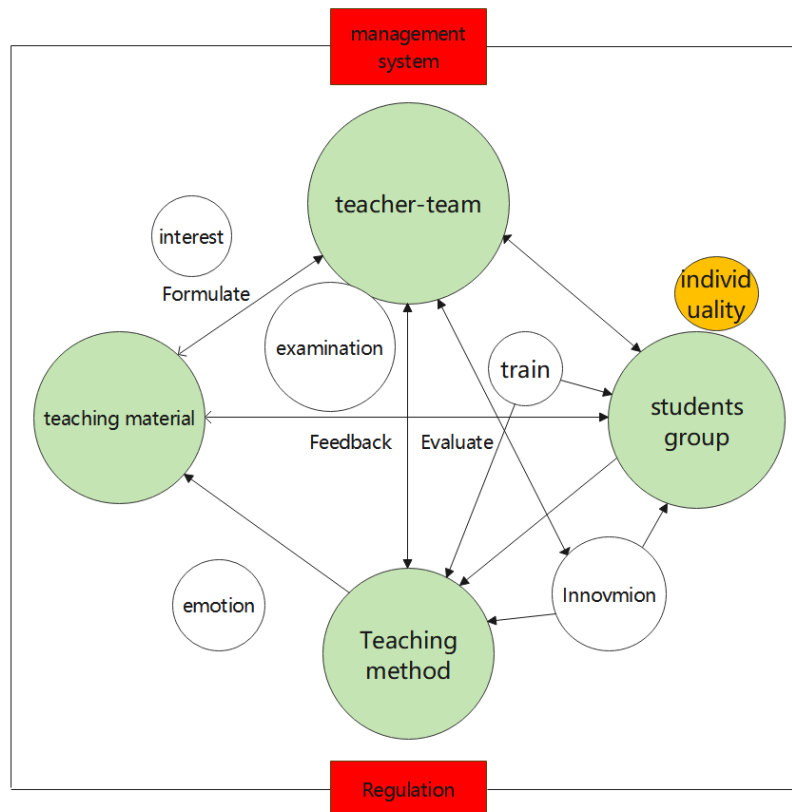


Figure 1: Each factor of ecological classroom affects each other and is related to each other

To apply "ecological classroom" to clinical practice teaching, first of all, we need to build a teaching team, improve the management system, and improve the relevant rules and regulations. Core members have strong organization, coordination and management ability. The teacher team selects senior attending physicians with rich teaching experience to train the teachers through "investigation and research, academic lectures, teacher forums, academic seminars and other means". Determine the teaching content according to the teaching syllabus and students' learning needs. Optimize and improve the ecological classroom teaching model, each subject set up sub-classroom teaching model. Set up an independent ecological classroom to create a comfortable and warm teaching environment. Ecological Classroom Evaluation Standards are formulated to combine student self-evaluation, pre-class

evaluation, classroom evaluation, social evaluation, examination evaluation and classroom evaluation to achieve multiple evaluation and real-time evaluation. Make the teaching method more multi-faceted, in a more vivid, easier to understand, more economical and applicable way, to get the best teaching effect, improve the clinical teaching ability. Better improve the teaching teachers' own theory, skill operation, clinical thinking, teaching and expression ability. In the learning process, students think about their shortcomings in many links such as disease etiology, mechanism analysis, clinical diagnosis and treatment plan, and think about improvement methods. Really improve students' theory, skills and clinical thinking ability, so that students in clinical work learning more relaxed, more interested.

5. Conclusion

Ecology is always linked with the environment, attention to ecology needs to improve the ecological environment. "Man is man in the environment". Classroom is the ecological environment for teachers and students' activities. One of the tasks of classroom teaching is to create a teaching situation conducive to students' growth. Through the setting of teaching situations, education transforms daily work resources into teaching resources. Teachers should leave time and space for students to think after raising problems, so that students can think about various ways to solve problems. By solving problems independently, students' abilities and thinking will gradually improve. Pay attention to the differences of students, grasp the activities of students as comprehensively as possible, and strive to collect useful resources and problem resources generated in the feedback of students, so as to build a classroom with situations.

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References

- [1] Meyer, H. S., Larsen, K., Samuel, A., Berkley, H., Harvey, M., Norton, C., & Maggio, L. A. (2022). *Teaching Medical Students How to Teach: A Scoping Review. Teaching and learning in medicine, 34(4), 379–391.*
- [2] Bilavych, H. V., Slyvka, L. V., Rozman, I. I., Bilawicz, J., Fedchyshyn, N. O., Fedoniuk, L. Y., & Savchuk, B. P. (2022). *ECOLOGICAL CONSCIOUSNESS FORMATION AMONG STUDENTS AS RELEVANT AND GLOBAL PROBLEM OF THE PRESENT: UKRAINIAN AND POLISH EXPERIENCE. Wiadomosci lekarskie (Warsaw, Poland : 1960), 75(7), 1705–1712.*
- [3] Creech, C., & Shriner, W. (2020). *DIY ecology class: Transitioning field activities to an online format. Ecology and evolution, 10(22), 12437–12441.*
- [4] Kavic M. S. (2012). *Teaching and learning of surgery. JSLS: Journal of the Society of Laparoendoscopic Surgeons, 16(3), 341–344.*
- [5] Wang, Y., Derakhshan, A., & Zhang, L. J. (2021). *Researching and Practicing Positive Psychology in Second/Foreign Language Learning and Teaching: The Past, Current Status and Future Directions. Frontiers in psychology, 12, 731721.*
- [6] Perrin-Stowe, T. I. N., Horner, M., Coon, J. J., Lynch, L. R., de Flamingh, A., Alexander, N. B., Golebie, E., Swartz, T. M., Bader, A. C., & Halsey, S. J. (2023). *"Where do I even start?" Recommendations for faculty diversifying syllabi in ecology, evolution, and the life sciences. Ecology and evolution, 13(1), e9719.*
- [7] Kong Y. (2022). *Are emotions contagious? A conceptual review of studies in language education. Frontiers in psychology, 13, 1048105.*
- [8] Brymer, E., & Schweitzer, R. D. (2022). *Learning clinical skills: an ecological perspective. Advances in health sciences education : theory and practice, 27(3), 691–707.*
- [9] Liu, H., Duan, S., & Chu, W. (2022). *Unraveling EFL Teacher Buoyancy in Online Teaching: An Ecological Perspective. International journal of environmental research and public health, 20(1), 613.*
- [10] Burmeister, A. R., Dickinson, K., & Graham, M. J. (2021). *Bridging Trade-Offs between Traditional and Course-Based Undergraduate Research Experiences by Building Student Communication Skills, Identity, and Interest. Journal of microbiology & biology education, 22(2), e00156-21.*
- [11] Furge L. L. (2015). *Social ecology of the classroom: issues of inclusivity. Biochemistry and*

molecular biology education: a bimonthly publication of the International Union of Biochemistry and Molecular Biology, 43(1), 1–2.

[12] Liu W. (2022). *A teaching design of ecological class based on immersive virtual reality spatial fusion. Frontiers in psychology, 13, 874101.*

[13] Jiang, Y., Li, J., & Wang, Q. (2022). *An ecological approach to understanding university English teachers' professional agency in implementing formative assessment. Frontiers in psychology, 13, 916980.*

[14] Wang L. (2022). *English Language Teacher Agency in Response to Curriculum Reform in China: An Ecological Approach. Frontiers in psychology, 13, 935038.*

[15] Griban, G. P., Okhrimenko, I. M., Myroshnychenko, M. S., Tomenko, O. A., Matrosov, S. O., & Rohovenko, M. M. (2022). *ECOLOGICAL EDUCATION AND ITS RELATIONSHIP WITH STUDENTS' HEALTH. Wiadomosci lekarskie (Warsaw, Poland: 1960), 75(2), 525–532.*

[16] Hao H. (2022). *Analysis of Ecological Environment Problems and Countermeasures in Ideological and Political Education in Colleges and Universities. Journal of environmental and public health, 2022, 9479881.*