

The Application of '172' Autonomous Classroom Model in High School Biology Education in China

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ABSTRACT: The "172" autonomous classroom model differs from traditional classrooms in that it meticulously arranges the overall semester learning plan, the design of classroom teaching segments, and the assignment of homework according to modules. By changing the classroom mode, learning processes, and evaluation methods, the aim is to improve teaching efficiency and quality. Based on personal teaching experience, this paper organizes and summarizes the "172" autonomous classroom model and proposes suggestions for its application in high school biology teaching. These suggestions include emphasizing the design of pre-class study outlines, valuing student interactions during teaching, and focusing on post-class learning feedback. The hope is to better exert the positive effects of the "172" autonomous classroom model.

KEYWORDS: "172" Autonomous Classroom; Biology; Application Strategies

1. Overview of the "172" independent classroom model

One high school in China (Beihai Minfu High School) has created its own "172" independent classroom model. The core theoretical foundation of Beihai Minfu High School is the core literacy under the orientation of Lidushi Renren, which is concentrated on different levels such as personal cultivation, innovation and practice, social care, and patriotism.

With the increasing promotion of the curriculum reform, the traditional classroom teaching mode is difficult to adapt to the requirements of modern society, and the "172" independent classroom model came into being. In the "172" independent classroom model, "1" refers to a semester study plan, and "7" refers to the seven steps of classroom teaching, specifically including the teacher's classroom introduction (3min), students' self-learning through reading materials (12min), students' discussion (7min), teacher's lecture (7min), students' mutual evaluation (9min), organizing what they have learned (2min), and students' test (30min), and the total classroom time is 70min. "2" refers to two independent homework assignments, which are divided into two parts of the mind map and error organization. In the "172" independent classroom teachers and students generally form a consensus, that is, learning is the student's own business, communication and interaction between students is the most effective form of learning, and the teacher's main role is to guide, organize and motivate students to learn independently.

With the deepening of the new curriculum reform and the promotion of the concept of core literacy, the traditional examination-oriented education model can no longer meet the needs of the current development of education. In this context, the "172 classroom" model, as an emerging teaching model, has been introduced into high school English teaching, aiming to

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improve students' independent learning ability and cultivate lifelong learning habits. Yan Rong (2022) elaborated the theoretical basis, implementation steps and application effects of the “172 classroom” model in English teaching in her study.

2. LITERATURE REVIEW

The “172 classroom” model emphasizes the students' subjective position in the classroom and promotes students' development in independent learning, cooperative communication, and creative thinking through innovative teaching structure and activity design. The model takes the semester study plan as a starting point and achieves comprehensive coverage and in-depth guidance of students' learning process through seven well-designed classroom teaching steps, as well as two independent assignments. Yan Rong's (2022) study pointed out that the “172 classroom” model showed significant advantages in improving the efficiency and quality of students' learning, as well as positively affecting the quality of students' thinking and cultural awareness.

Su Yongzhou's (2022) study explored the theoretical basis and practical application of the “172 classroom” model from a broader perspective. The study drew on a variety of educational theories, including constructivist learning theory and humanistic psychological theory, to build a harmonious and authentic student-centered classroom. Su Yongzhou (2022) emphasized the leading role of the teacher and the play of the students' main role in the model, which realized the comprehensive cultivation of students' core literacy through seven teaching links, such as creating a context, independent exploration, and seminar submission.

Both papers pointed out that the “172 classrooms” model still faces some challenges in the process of implementation, such as the change of teachers' roles, the cultivation of students' independent learning ability, and the support of school culture and policies. These challenges need to be explored and solved by educators in practice.

In summary, as an innovative teaching model, the application of the “172 classroom” model in English language teaching in Chinese high schools is still in the exploratory stage, but its potential for promoting the development of students' core literacy has been initially realized. Future research should further explore the long-term mechanism and optimization strategies of this model so that it can be promoted and applied in a wider range of educational practices.

3. ADVANTAGES OF THE “172” INDEPENDENT CLASSROOM MODEL

Compared with the traditional classroom, “172” independent classroom model shows a lot of advantages, mainly embodied in the adherence to the educational philosophy of “students as the main body, the teacher as the leading role, to the core of the students' thinking training, practice as the main line”. Cooperative education, constructivism, and other theories as a guide to promote the progress and improvement of students, to improve independent learning conscientiousness, persistence, and knowledge acquisition efficiency, for students to lay the foundation for a better future, service. According to the requirements of the new curriculum reform, teachers are required to change the past tendency to focus on the transmission of knowledge, its fundamental purpose is human development, advocating the independent, inquiry, cooperative learning style. The traditional classroom is mostly full of irrigation, and teacher-led situations, it is difficult to meet the needs of today's development, and the exploration and practice of the “172” independent classroom model is in line with this requirement. This new teaching mode on the one hand can enhance the educator's sense of responsibility, on the other hand, it can fully exercise the students' subjective initiative, so that they can be fully involved in all teaching aspects of the biology classroom.

4. “172” INDEPENDENT CLASSROOM MODEL IN SENIOR HIGH SCHOOL BIOLOGY TEACHING APPLICATION STRATEGY

In this part, the researcher discusses the specific application strategies of the “172” independent classroom model in high school biology teaching. Through innovative teaching methods, this model aims to improve students' independent learning ability and

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classroom participation, to enhance teaching efficiency and quality. The following is a detailed strategic analysis of the application of this model, including the three key aspects of pre-course preparation, classroom interaction, and post-course feedback.

4.1 Emphasize the design of the introductory syllabus before class

The introduction of the guided learning outline is a typical feature of the “172” independent classroom model, which runs through the classroom and is a bridge between teaching and learning. In the “Learning” section, students can not only understand the learning objectives of the lesson through the guided outline but also help students master the teaching content and cultivate their ability to learn and construct knowledge independently. Each guided outline of the first page of the subject below the written learning objectives of this class, such as in the necessary to repair 2, chapter 2, section 1, “meiosis and fertilization” section of the guided outline, clearly written in this section of the learning objectives of this class “1. Elaborate the concept of meiosis; 2. Elaborate on the concepts of homologous chromosome groups, tetrasomes, associations, etc. (emphasis); 3. Describe the process of spermatogenesis Behavioral changes of chromosomes during various periods in the process of sperm formation (important and difficult points)”. Displaying the learning objectives is conducive to students giving full play to the self-consciousness and enthusiasm of learning so that students can test, evaluate, regulate, and control their learning so that the learning activities along the right track lively and vividly unfolded (Rone et al., 2023)

The design of the guided syllabus is a key link in the use of this model, which directly affects students' interests and thinking. Therefore, extra attention should be paid to changing the concept and establishing the new curriculum concept. Teachers should design the guided outline before class, and teachers should take the starting point of improving students' ability to think well, understand the content of learning, and increase their interest in learning, and design the guided outline to cultivate students' core literacy in biology. At the same time, teachers should optimize the guided outline according to the “7” steps of classroom teaching to improve the efficiency of the classroom, so that the “172” independent classroom model has the greatest effect.

4.2 Emphasize student-student interaction in teaching

The most important feature of the “172” independent classroom model is to emphasize the communication and interaction between students and pupils, which is a prerequisite for training students' divergent thinking and innovation abilities, and one of the most important conditions for improving teaching efficiency and quality. Biology not only has a rich theoretical knowledge system but also includes the way people understand natural phenomena, explore the laws of life, and the process of scientific inquiry (Deria et al., 2023). The high school biology curriculum requires students to actively participate in inquiry activities, acquire biological knowledge in the activities, and at the same time pay attention to the integration and integration, improve the ability to transfer knowledge, and form a more comprehensive and systematic knowledge network. In addition, the high school biology curriculum also requires students to use biological knowledge to explain the phenomena of daily life, according to the phenomena to collect information for testing and verification, and finally form certain laws or conclusions, this process is conducive to promoting students' ability to explore and lifelong learning ability.

Based on this, in the application of “172” independent classroom in high school biology teaching, teachers should pay more attention to the orderly interaction between students in “discussing learning” and “displaying learning”, and teachers play a supporting role. The teacher plays an auxiliary role. The “172” independent classroom model emphasizes students' autonomy and cooperation, performance, and communication, but it doesn't mean that teachers' responsibility is reduced and their role is lowered, instead, it puts forward higher requirements for teachers. Teachers should record students' unresolved problems and error-prone knowledge points in “discussing learning” and “showing learning”, and then put these knowledge points into the assessment of learning to discuss with the teacher. In this process, teachers need to pay attention to the observation of students' learning status and mastery of the problem, on the basis of which the next step of the teaching program arrangements.

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4.3 Emphasize the feedback of learning after class

The main reason why the “172” independent classroom model has been widely noticed and praised by parents and students is that it has changed the role and status of students in the traditional classroom, so the feedback on learning after class should be emphasized in the future. On the one hand, teachers can start from the guidebook and assessment to judge students' mastery and correction through irregular checking; on the other hand, teachers can judge students' mastery of each chapter through students' regular compilation of wrong question sets and mind maps. According to the different mastery of students, teachers can carry out differentiated counseling that is “cultivating excellence and assisting the weak”, more targeted to improve the individual students in the individual knowledge deficiencies, and truly “tailored to the needs of the students”, to promote the students to master the knowledge of the intrinsic structure and the connection between the formation of biological knowledge system. The students will be able to grasp the inner structure and connection between knowledge and form the knowledge system of biology.

In addition, post-course learning feedback is the best way to encourage teachers to optimize teaching, through reflection to continuously improve teaching practice, to better guide students, and ultimately promote the overall development of students (Ceven McNally, 2016). In the usual teaching activities, we pay attention to timely post-class reflection, and can timely grasp the advantages and shortcomings of this lesson, the existence of confusion and problems, is conducive to correcting and solving the difficult problems and shortcomings in teaching.

5. CONCLUSION

The “172” independent classroom model is a practical reform measure for classroom teaching, which can stimulate students' learning initiative and conscientiousness, and promote students' independent learning and development. However, in practice, due to the lack of understanding of the model there are some problems, such as part of the introduction to the syllabus of the topic is simply set to copy the textbook content by digging out the way, students in the “learning” stage just spend a lot of time to fill in the blanks, but lack of space to think.

On a larger scale, the implementation of the 172 independent classrooms still requires the coordination of various subject preparation groups, class levels, schools, and departments, including the academic evaluation system and the students' work and rest schedules. From a small perspective, the development and production of pre-course resources for teachers need to be completed in collaboration with various educators, classroom teaching activities, but also brainstorming to design, students in the entire learning process, from self-study to inquiry, but also inseparable from the collaborative exchange of ideas, but also put forward higher requirements for teachers.

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