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Experimental Research on the Application of Hierarchical Teaching Method in General Course of Track and Field in Colleges and Universities

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ABSTRACT. *According to the rules and characteristics of P.E. teaching, with the combination of the development,layering and individual of the educational object. Taking sport pedagogics profession male students as the research subject, through the delaminated teaching method, implementing teaching according to student's ability. The results indicate that the delaminated teaching method can not only attach the education for all-around development, but also arouse students' study motivation, improve the study activity. Making different level students rewarding. And so improve the quality of teaching of track and field required course.*

KEYWORDS: *Track and field required course; Delaminated teaching method; Teach according to student's ability*

1. Introduction

Due to the influence of genetic quality, family background, social environment and education level, it is absolute that students have individual differences [1], because of which their mastery of skills and comprehension abilities of track and field techniques are also not the same. The traditional teaching adopts "one-size-fits-all" teaching method and ignores the students' individual differences in physical quality and the track and field technical level, which cannot reflect the principle of individualized teaching and the principle of distinct treatment. As a result, the students with good grades will feel the course content is too simple and boring, thus decreasing their interest in learning; the poor students thinks it too difficult, the teaching progress is too fast, which also reduces their interest in learning, forming a phenomenon that good students is "thirsty for knowledge" while the weak students cannot "digest what they are taught". Aiming at these practical problems, this experiment attempts to confirm the feasibility and good teaching effect of the "hierarchical teaching method" in physical education in colleges and universities according to the characteristics of current track and field teaching, thus providing an alternative teaching method for teaching reform.

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2. Research Subjects

A total of 120 male physical education majors from 4 undergraduate classes of 2018 in Physical Education College of Gannan Normal University are randomly selected. In order to facilitate the research and analysis, the experimental subjects are randomly divided into two groups: 60 students in the experimental group and 60 students in the control group. The hierarchical teaching model is applied for the experimental group, while the traditional teaching model for the control group.

3. Research Methods

3.1 Documentary Method

By referring to the relevant literature and books and learning the hierarchical teaching theories and methods, the scientific experiment is designed to explore the application of hierarchical teaching method in the general course of track and field in ordinary colleges and universities.

3.2 Questionnaire Method

In order to check the teaching results, the "Questionnaire of Hierarchical Teaching Model" is designed based on the research content and tasks of this topic to learn about the feelings and opinions of the participants on the "hierarchical teaching". 120 questionnaires are distributed and 120 copies are collected. The effective rate is 100%.

3.3 Mathematical Statistics

The multiple comparison method is applied to test the difference between the two groups in test indicators after the teaching experiment with the purpose to examine the effect of the hierarchical teaching model. All measurement index data were statistically processed and quantitatively analyzed with statistical software SPSS 11.0.

3.4 Experimental Method

Treatment of experimental subjects before the experiment: Special physical fitness tests are performed on the experimental subjects as the comparative data before the experiment.

Experiment Content: hurdle technique course.

Quality Test: 100m, standing long jump.

Specialized Technique Assessment: (1) Assessment criteria: Assess the hurdling

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skills (2) Assessment method: Assessed by track and field teaching and research section consisted of five teachers with rich teaching experience.

Experiment Equipment: stopwatch, meter ruler, hurdle, starting block, calculator.

Experimental design and condition control: Before the level teaching experiment is carried out, the teacher will first conduct a questionnaire survey on the students in the class to learn about the students' sports experience and physical quality, then introduce the purpose, content and performance evaluation methods of hierarchical teaching to the students, and finally divide them into three levels: A, B and C. In the quality test, students scored 85 or higher are considered as level A, between 70 and 85 as level B, below 70 as level C. After two weeks of trial, the teacher can make some appropriate adjustments according to the students' wishes and learning conditions. Students who have made rapid progress in learning and have a strong sense of movement will be promoted to the higher level after some class hours of study. In the teaching experiment, students are not fixed at a certain level. During this period, the students at level A, B and C can interact with each other so as to stimulate their learning enthusiasm and improve their exercise level, which has fully reflected the principle of individualized teaching and avoided students' negative emotions and inferiority complex.

Model operation method during the experiment process: The teaching content is unified according to the content specified in the track and field general course syllabus. The teaching time is 5 weeks, 4 hours per week, a total of 20 hours. During the experiment, the traditional teaching method is adopted for the control group without any other interference factors, while the hierarchical teaching is for the experimental group and the teaching is planned and controlled. Different teaching plans are developed before class according to the different teaching subjects in each class to adapt to the characteristics and needs of students at different levels. For level A students, the traditional teaching method is mainly adopted because they have better physical quality, relatively strong comprehension ability and good acceptance for track and field techniques. It is necessary to attach great importance to their ability to master track and field skills, be strict with them and guard against arrogance; for level B students, the teaching content is mainly based on the syllabus. The competitive mechanism is introduced to encourage them to learn from level A students; for level C students, the most important thing is to enhance their learning confidence, improve their physical fitness, adjust their mental state, use their expectation for success, create favorable conditions for the students and encourage them to practice more. The teaching contents are mainly the basic skills which shall be explained and demonstrates in detail with incentive teaching method and the guided teaching method so as to correct the wrong action and establish the correct action concept.

4. Research Results and Analysis

4.1 Analysis of Experimental Results

(1) Comparative Analysis of the Physical Quality Before Experiment

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Table 1 ical fitness tests have been performed on the experimental group and the control group before the experiment. The results from table 1 show that there is no significant difference (P>0.05). This indicates that the physical quality of students in the experimental group and the control group are basically at the same level, which is in agreement with the requirements of teaching experiment conditions.

Table 1 Comparison of Physical Fitness between Experimental Group and Control Group Before Experiment (n=120)

Group		100 meters (sec)	Standing long jump (m)
Experimental group	Average value	12.23	2.72
	Standard deviation	0.04	0.24
Control group	Average value	12.26	2.70
	Standard deviation	0.03	0.25
T test		P>0.05	P>0.05

(2) Comparative Analysis of Teaching Results between Experimental Group and Control Group after Experiment

Table 2 ve weeks of teaching practice, we have summarized and analyzed the physical quality of the students in the experimental group and the control group as well as their technical achievements of the special assessment sports. It is known from Table 2 that the grades of the experimental group adopting hierarchical teaching method are significantly higher than that of the control group in all sports. The difference is significant after T value test. As shown in Table 2, after T test, the quality index results of the experimental group and the control group are also significantly different (P<0.05); the hurdling technique achievements are significantly different (P<0.01) too after T test. This indicates that it is effective and helpful to apply the layered teaching model in track and field skill classes.

Table 2 Comparison of Teaching Results between Experimental Group and Control Group after Experiment (n=120)

Group	100 meters (sec)	Standing long jump (m)	Hurdle technical scores (min)	Sample size
Experimental group (M±SD)	12.08±0.03	2.77±0.29	84	60
Control group (M±SD)	12.24±0.05	2.71±0.21	78	60T
test	P<0.05	P<0.05	P<0.01	

4.2 Analysis and Discussion

(1) Theoretical Basis for Hierarchical Teaching in Track and Field General Course in Ordinary Colleges and Universities

Hierarchical teaching is to divide the students into different levels according to

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their differences in physical fitness and based techniques based on the content and requirements of the course. Each level has different contents, different difficulty levels, different practice means and methods and evaluation of learning effect at different levels with the purpose to truly teach the students in accordance with their aptitude. In this way, the students at all levels can develop themselves on the basis of their original knowledge and skills, and the teaching quality is also improved. Therefore, it is a teaching method that can students accumulate knowledge and skills [2].

The "people-oriented" education thought is emphasized in modern education. To truly realize such education, it is necessary to break up the teaching model that objectively requires different students to adapt to a unified teaching plan and replace it with a hierarchical teaching model. From the new teaching perspective, the general course of track and field requires the teachers to create a teaching environment suitable for students at different levels and reflects the student-oriented teaching concept in teaching, rather than blindly ask the students at different levels to adapt to the unique teaching environment created by the teacher [3]. To achieve the best teaching results, it is necessary to know how to determine the student's Zone of Proximal Development and how to take care of every student's zone of proximal development [4]. Therefore, teachers should have full confidence in each student and provide them with an ideal teaching environment and appropriate learning conditions.

(2) "Hierarchical Teaching" Conforms to the Principle of Individualized Teaching

It can be seen from the experimental results that the experimental group have significantly better grades than the control group. This is because the "hierarchical teaching" is more targeted and can cater to students' individual needs. As hierarchical teaching pays more attention to students' subjectivity and is able to effectively stimulate students' interest in learning, the students gradually change their learning attitudes from "be required to learn" to "I want to learn". It has mobilized their enthusiasm and initiative to learn, helped them maintain a positive and enthusiastic learning attitude and increased their learning motivation [5], which solves the problems of "thirsty for knowledge" and "not able to digest" in the past and makes the individualized teaching truly implemented in the teaching practice, thus promoting the overall improvement of the students' level.

(3) "Hierarchical Teaching" Introduces a Competitive Mechanism and Gives Classified Guidance to Students

Table 3 be seen from the experimental results (see Table 3) that the application of the "hierarchical teaching method" has a significant effect on improving the technical achievements of both excellent students and slow learners. This is because "hierarchical teaching method" helps classify and guide students according to their levels. According to the characteristics of students at all levels, different teaching methods and means are applied and different learning objectives are proposed so that students at all levels can learn what they are good at under the guidance of the syllabus. "Hierarchical teaching" is a dynamic hierarchy that emphasizes students as

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the mainstay to fully mobilize students' autonomy and enthusiasm. It focuses on the vertical connection between goals at all levels, introduces the competition mechanism and implements the student grading system [6] to create a good learning atmosphere in which the students learn from each other, compare with each other, compete with each other, promote each other, students at the same level compare with each other and everyone strives to be first. The experimental results show that the experimental group (48.3%) is significantly better than the control group (38.3%) in good and excellent achievements of technique assessment and the students at all levels have made a significant improvement.

Table 3 Number of Students At Each Level of the Experimental Group and the Control Group

Group	Excellent (level A scored 85 or more)	General (level B scored 70-85)	Poor (level C scored 70 or less)
Experimental group	29	25	6
Control group	23	22	15

(4) “Hierarchical Teaching” is Beneficial to Students' Learning Confidence and Cultivation of Lifelong Physical Exercise Awareness

Table 4 e help of “hierarchical teaching”, the experimental group has enhanced students' learning confidence and created conditions for the slow learners to transform into good students, which lays foundation for students with good physical quality to further improve their competition level and stimulates students' learning initiative and consciousness at the same time. By arranging the teaching level scientifically and orderly and adhering to the gradual and progressive principle and easy-to-difficult principle of sports skills [7], the students have developed their understanding and mastery of motor skills, which lays the foundation for lifelong sports. The experiment proves that the “hierarchical teaching” can better stimulate students' interest than the traditional teaching method. The results of the questionnaire survey show that “hierarchical teaching” which can better stimulate students' interest in the general courses of track and field is a popular teaching method among students (see Table 4). The survey also indicates that this new teaching method has improved the students’ frequency of participating in extracurricular sports activities. The number of extracurricular activities in the experimental group is significantly higher than that in the control group. As for the students' approval of the teaching method (whether it contributes to the foundation of lifelong sports), the experimental group (81.7%) is higher than in the control group (46.7%).

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Table 4 Comparison of Response to Different Teaching Model in Experimental Groups and Control Groups

Group	Experimental group (hierarchical teaching) Number of people	%	Control group (traditional teaching) Number of people	%
very interested	37	61.7	22	36.7
general	18	30	27	45
not interested	5	8.3	11	18.3
5 times or more	26	43.3	15	25
3-4 times	21	35	19	31.7
1-2 times	13	21.7	24	40
no	0	0	2	3.3

5. Conclusion and Suggestions

1) The hierarchical teaching method applied in the general course of track and field is in line with the modern teaching thought and suitable for the physical quality, athletic ability and psychological characteristics of contemporary students. It not only makes the students at different levels learn more, but also has significantly increased the skill level of the whole class and improved the teaching quality of the general course of track and field.

2) Compared with traditional teaching, hierarchical teaching can better carry out the principles of individualized teaching and distinct treatment, stimulate students' sense of competition and enable the students with different physical quality and athletic ability to develop in an all-round way. Therefore, it plays a positive role in promoting their self-confidence and self-challenge.

3) Hierarchical teaching can effectively stimulate students' interest in learning, improve students' enthusiasm for learning and play an important positive role in improving students' physical fitness, enhancing sports participation awareness and cultivating lifelong sports thoughts.

4) Hierarchical teaching is not a goal, but a means. The purpose is to teach students in accordance with their aptitude so that all students can find their own position and actively participate in teaching activities, thus satisfying the needs of students at all levels.

5) Hierarchical teaching is a complex, comprehensive, systematic and continuous teaching task. It is necessary to combine the theory and practice and give full play to the role of students. Although the starting points, teaching progress and teaching requirements at different stages are not the same for the students at different levels, the final learning objectives to be achieved are the same. Therefore, the teachers are required to spend more time and energy in knowing more about all students and carefully design the course to make sure that each student has made some progress on the original basis. In addition, in hierarchical teaching, teachers should focus on the excellent students and slow learners, promote the average students, consciously

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improve the students' weakness, and give more praise and encouragement.

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