

# Application of asynchronous teaching method in College Basketball Course

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**Abstract.** This study compared the changes of asynchronous teaching method and traditional teaching method on students' physical quality, basketball technology and learning state. The construction of heterogeneous learning groups is divided according to the principles of inter-group homogeneity and intra-group heterogeneity. In the experimental group, the proportion of students in the improved group, the consolidation group and the basic group is about 1:3:3. After a semester of teaching, it is found that the experimental group (asynchronous teaching method) compared to the control group (traditional teaching method): 1) there is no difference between the two groups in the physical examination; 2) there is no difference in the basic skills of basketball, and there is a significant difference in the scores of V word dribble running ( $p < 0.05$ ), and there is a very significant difference in the swerving dribble ( $p < 0.01$ ); 3) there is significant difference in learning motivation ( $p < 0.05$ ), and there is a very significant difference in learning interest and attitude towards learning ( $p < 0.01$ ). This paper also summarizes the advantages of implement asynchronous teaching method.

## 1. Introduction

Basketball class is an important part of college physical education. With the popularity of campus basketball, more and more students take an active part in basketball. How to improve students' sports ability and psychological quality through basketball class is a problem faced by PE teachers.

Basketball class is a part of public physical education, so it involves a wide range of teaching objects. Some PE teachers teach all students in accordance with the unified teaching syllabus standards, and lack of flexible teaching plan compared with students' actual ability. The reason is that teachers are self-centered and ignore students' real basic level, which leads to students being passively indoctrinated by teachers and hitting students' learning enthusiasm. Therefore, it is necessary to find a new teaching method to meet the teaching requirements of modern public sports basketball.

## 2. Basic Theory of Asynchronous Teaching Method

### 2.1 The Zone of Proximal Development Theory

Vygotsky's theory of proximal development zone holds that there are two levels of students' development: one is the current level of students, the other is the possible level of students' development, and the gap between the two is the proximal development zone.

Teaching should focus on the proximal development area of students, provide students with difficult content, mobilize students' enthusiasm, give full play to their potential, surpass their proximal development area and reach the level of their more difficult development, and then proceed to the next development area on this basis.

### 2.2 Universality and Particularity of Contradiction

The universality of contradiction means that contradiction exists in the development process of all things. The particularity of contradiction refers to the contradiction of concrete things and each aspect of contradiction has its own characteristics.

Students also have different contradictions in their study, which reflect individual differences. Each student has different contradictions to solve in different stages. Therefore, the methods and means of solving problems in the teaching process are different, which requires us to use asynchronous teaching to break each student's learning conflicts.

### **3. Research Objects and Methods**

#### **3.1 Experimental Design**

Basketball course of public sports is a course open to the whole school. There are great differences in students' physical quality foundation and basketball technical foundation. According to different situations of students, asynchronous teaching method emphasizes multi-level teaching and formulates teaching content and evaluation standards corresponding to students' level. Through the teaching practice of 32 class hours in one semester (2 class hours per week \*16 weeks), the physical quality, basketball technology and learning state of the experimental group and the control group are compared, and the application effect of asynchronous teaching method in basketball class is verified. During the experiment, the experimental group and the control group were consistent in teaching progress, site equipment, teaching hours and teaching objectives.

In order to avoid the influence of teachers' own teaching level, the experimental group and the control group were taught by the same teacher. In order to avoid the experimental group students, know that they are experimental subjects, in terms of psychology and behavior tend to experimental purposes, resulting in "hawthorne effect". In order to increase the scientific of the experiment, teachers should not inform students during the experiment, so this study is a single-blind experiment.

In the final technical assessment, a non-course teacher will conduct the assessment. During the assessment process, the experimental group and the control group will be shuffled, and the research will be objective and scientific through double-blind assessment.

#### **3.2 Experiment Implementation**

In order to ensure the effectiveness of the research and exclude the influence of students' differences on the experiment, it is very important to select subjects with homogeneity. First of all, 165 students with similar performance in running, jumping, shooting and basketball skills were selected from 1,020 students of grade 2018 according to their scores in the physical fitness test. A week before the experiment, the 165 students were tested for differences in psychological factors. Finally, 84 students were selected, including 42 students in the experimental group and 42 students in the control group.

According to the test results before the test, the students in the experimental class were divided into three levels: improvement group, consolidation group and foundation group. The students in the improvement group have good basic basketball skills and good physical quality. Students in the consolidation group have general basketball skills, good physical quality or better. Students in the basic group have poor physical fitness and do not exercise.

The construction of heterogeneous learning groups is divided according to the principles of inter-group homogeneity and intra-group heterogeneity. In the experimental group, the proportion of students in the improvement group, consolidation group and basic group is about 1:3:3. Considering that the number of students is 42, there are 7 members in each heterogeneous learning group, and 6 heterogeneous learning groups are divided. So the levels were roughly the same, and each heterogeneous learning group contained three levels. The division of study groups is more conducive to reducing the inferiority of students in the basic group than simple stratified teaching, and it is also conducive to students in the group to learn from each other, improve together, and create a good atmosphere of competition and cooperation. So that some students with poor learning foundation in heterogeneous group get more peer help, high-level students can also strengthen the foundation, improve ability. In addition, heterogeneous learning groups can organize teaching competitions among groups, which will also help improve students' cooperative and enterprising spirit.

### 3.3 Data Analysis

#### 3.3.1 the influence of asynchronous teaching method on students' physical quality

In terms of physical quality, the 100-meter run, standing long jump and shot put test are adopted to measure the students' speed, explosive force and strength. The measured results before the experiment are shown in table 1, and the measured results after the experiment are shown in table 2.

Table 1 T test before students' physical fitness experiment

project	experimental group	control group	T	P
100m(s)	14.211±1.082	14.013±1.142	0.126	>0.05
standing long jump(m)	2.283±0.252	2.331±0.174	-1.115	>0.05
shot put(m)	6.182±1.863	6.232±1.471	-0.117	>0.05

Table 2 T test after students' physical fitness experiment

project	Experimental group	control group	T	P
100m(s)	14.219±1.114	14.139±1.081	0.107	>0.05
standing long jump(m)	2.281±0.182	2.299±0.169	-1.103	>0.05
shot put(m)	6.179±1.945	6.231±1.312	-0.118	>0.05

From the results, after a semester of practice, there was no difference in physical fitness between the experimental group and the control group in the t-test of various dimensions. The possible reason is that the physical education teaching of 16 weeks with 2 class hours per week is a short period of low-intensity exercise, so it is difficult to change students' physical quality in a short time no matter which teaching method is adopted.

#### 3.3.2 the influence of asynchronous teaching method on students' basketball skills

Basic basketball skills measure spot shooting and V dribble running. The measured results before the experiment are shown in table 3, and the measured results after the experiment are shown in table 4.

Table 3 T test before students' basketball technology experiment

project	experimental group	control group	T	P
fixed-point shooting	5.452±2.281	5.571±2.151	-0.297	>0.05
V dribble running (m)	8.253±2.345	8.192±2.547	0.301	>0.05

Table 4 T test after students' basketball technology experiment

project	experimental group	control group	T	P
fixed-point shooting	7.071±1.282	6.821±1.212	1.821	0.078
V dribble running (m)	5.319±1.012	6.110±1.032	-2.498	0.034*

In terms of the results, after a semester of practice, the scores of the experimental group and the control group in fixed-point shooting were improved compared with those of the students before the experiment, but there was no significant difference in the scores of the two groups. The shooting percentage is not only affected by technical factors, but also by the impact of improvisational, so in addition to the shooting percentage, the experiment also observed the students' shooting skills. In the experiment, teachers were asked to record not only the hit rate of students, but also their shooting posture, throwing curve, and whether they have the consciousness of hitting the board. Finally, statistics showed that students in the experimental class performed better in technical movements.

V dribble running project plays a lower chance of abnormal, compared with the shooting project can reflect the technical level of students. Among them, the scores of the experimental group and the control group were improved before and after the v-shaped dribbling experiment, and the scores of the two groups were significantly different after the experiment, and the experimental class was superior to the control class. It can be seen that asynchronous teaching method plays a certain role in promoting students' basketball skills in short-term teaching, but such as shooting, which needs to cultivate on-the-spot stability, asynchronous teaching method has no obvious advantages in short-term teaching.

### 3.3.3 the influence of asynchronous teaching method on students' learning state

According to some questionnaires in the evaluation manual of psychological scale commonly used in sports science, the psychological factors of students' learning state are tested, including learning interest, learning attitude and learning motivation. The measured results before the experiment are shown in table 5, and the measured results after the experiment are shown in table 6.

Table 5 T test before students' learning state psychological factors experiment

project	experimental group	control group	T	P
learning interest	3.613±0.214	3.635±0.256	-0.421	>0.05
learning attitude	3.512±0.253	3.535±0.182	-0.525	>0.05
learning motivation	3.644±0.221	3.652±0.234	-0.632	>0.05

Table 6 T test after students' learning state psychological factors experiment

project	experimental group	control group	T	P
learning interest	4.203±0.441	3.701±0.347	2.798	0.008**
learning attitude	3.982±0.324	3.547±0.472	3.101	0.007**
learning motivation	3.897±0.456	3.557±0.589	2.047	0.046*

According to the results, students in the experimental group and the control group have significant differences in learning interest and attitude, and significant differences in learning motivation. It can be seen that in the teaching process, students master sports skills through cooperation and mutual assistance in heterogeneous learning groups, and their sense of achievement improves the indicators of psychological factors.

## 4. Conclusion

The experimental research shows that asynchronous teaching method can play a positive role in students' motor skills and psychological factors. Asynchronous teaching method is that teachers group students according to their specific learning conditions and set up different teaching contents for students at different levels. The construction of each heterogeneous learning group is divided according to the principles of homogeneity between groups and heterogeneity within groups (including but at different levels). Students in the group should learn from each other in a cooperative and cooperative way to create a good atmosphere of competition and cooperation. Teaching competitions can be organized among groups to cultivate students' cooperative and enterprising ideas and positive competition spirit. By constructing heterogeneous learning groups, all kinds of students can achieve the best learning effect, which reflects the principle of teaching students in accordance with their aptitude. However, this study also has shortcomings. The experiment period is short and only covers one item of basketball in public physical education. In the future, asynchronous teaching method should be extended to more special practices to promote the improvement of the theory of asynchronous teaching method.

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