EFFECT OF 6-WEEKS CONTENT KNOWLEDGE WORKSHOP ON WRITTEN TEST PERFORMANCE AMONG PHYSICAL EDUCATION STUDENT IN CHINA

NCT Number: 2021-521

Date: 5/11/2021

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Executive Summary

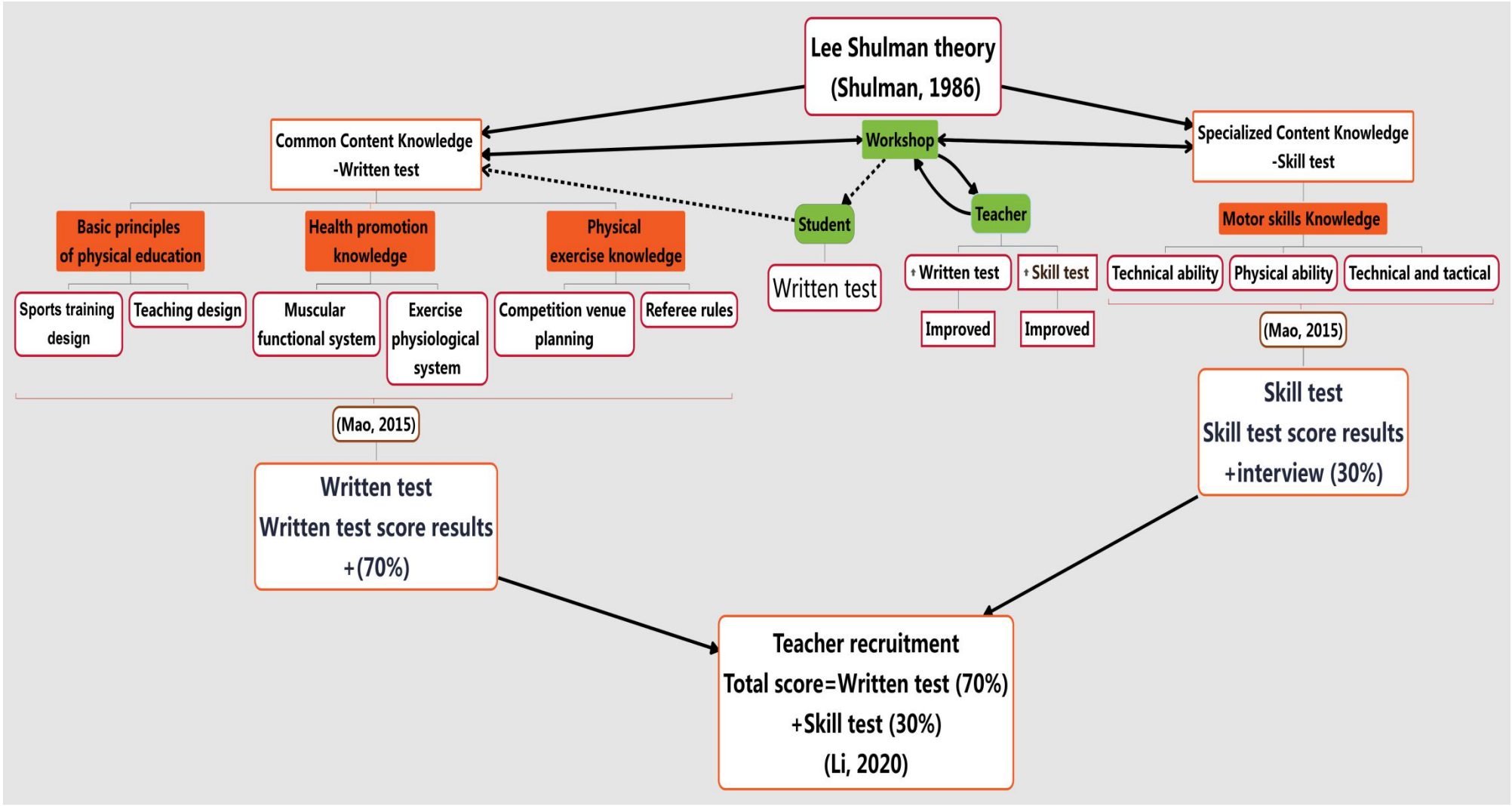
The employment survey of Chinese students found that it is very difficult for students majoring in physical education to find jobs. The analysis found that the main factor causing employment difficulties is that Chinese students have very low written test achievements. However, content knowledge determines the student's written test achievement. Therefore, to solve student employment difficulties, the student's written test achievement and improving the students' written test achievement through experimental design and quantitative research methods.

This experiment aims to use two different teaching methods to intervene in students' learning and find out which teaching method is more conducive to improving students' written test achievement. The experiment will use a 6-week workshop intervention to enhance students' written test achievement. The experiment is divided into workshop groups and standard teaching groups. The most significant difference between the two groups is that the workshop group has oral links and guarantees. The similarities between the two groups are: The same teacher qualifications； The same intervention time； The same content； The same research objects.

Based on content knowledge learning, content knowledge is divided into six categories for detailed intervention. We will do a 6-week intervention for two groups (workshop style and standard teaching style). After that, we will assess their progress based on writing tests that the Examination agency develops.

The difference between the two is whether there is a video teaching link, and the same is that there are oral links. The entire experiment was carried out in the classroom with the school's consent. Use written exams to check student scores. Students have special teachers responsible for teaching specific content knowledge during class, standard learning after class does not require special care, and the experiment is not risky.

1. Research Framework



This experiment aims to provide a theoretical basis for improving teaching methods. Increase the employment rate of students and ease the employment pressure of students.

The research framework mainly includes three parts: experimental group, control group, and workshop. Through 6 weeks of workshop and six weeks of standard teaching , the content knowledge was intervened. Interventions include: 1) Sports training design. Teaching design. 2) Muscle function system. 3) Exercise physiology system. 4) Competition venue planning. 5) Referee rules. Workshop groups and standard teaching groups both use test paper types to analyze data. After the intervention, the differences between the workshop and the standard groups were compared through paper analysis. The written test includes pro-test and post-test.

Based on a systematic literature review. It can support my research. To do this, we will progressively analyze the theoretical framework. Based on the Schulman study, CK is divided into CCK and SCK. First and foremost, CCK includes basic physical education knowledge, health promotion knowledge, and physical exercise knowledge. Then, continue to be divided into one part: Sports training. Design ， Teaching design， Muscular, functional system， Exercise physiological system， Competition venue planning，Referee rules。 According to Mao's literature, these six parts of sports content knowledge are what students need to learn.

On the other hand, Specialized Content Knowledge -skills, the -Skill test is Motor skills Knowledge. Including Technical ability, Physical ability, Technical and tactical.

Last one teacher recruitment, you see, when you want to recruitment teacher in China, 70% is based on written test, you see interview only 30%, which in

including skill, so how also to be for you get a job, you need to score in the written test. According to the finding from the research, in China, all the students did very poorly in the written test. China is not doing very well, but the study showed that they have workshops for teachers to improve their skills. But they have never done for the student. That is why we want to try workshop apply the workshop to the student. Based on the literature review, whether we can see the same achievement as the teacher, I think the workshop may help, but only you know after your data. It is better on the but, we don't know workshop on students, that is why we want to the students, I think workshop, compared to the workshop on students follow on workshop on the teacher, as student follow the standard teaching as, the school better on the written test.

2.Explain in detail the research design that we have employed in this study

a)The research design outline

A good research design should have these characteristics: eliminating deviation, avoiding confusion, controlling irrelevant variables, and testing the statistical accuracy of the hypothesis（Wellesma et al., 2010）. In addition, we must follow the basic theoretical knowledge of research and design. Therefore, the following is discussed in detail based on the research outline.

a) To establish a cause and effect relationship between the workshop and students ' written test performance.

The simplest experimental design

i) Randomly select subjects from College students majoring in physical education.

ii) Workshop group - receives treatment.

iii) standard teaching - does not receive treatment.

b) When to use experimental procedures?

i) Between the workshop and students have written test performance.

ii) Control for all variables that might influence the outcome.

c) Used when comparing workshop, and standard teaching group

i) Random assignment - assign individuals to random groups.

ii) Control over extraneous variables that might influence the relationship - influence in participant selection, procedures, statistics, or the design likely to affect the outcome.

iii) Manipulation of the treatment conditions - manipulate the workshop to determine the effect on the outcome.

iv) Outcome measures - assess whether the treatment conditions influence an outcome (Students' written test performance

vi) Group comparisons - compare students' written-test performance for different treatment.

f) Guard against threats to validity - guard against false conclusions.

b) Design details

Part Two

This research design refers to the plan or strategy of conducting a six-week content knowledge intervention on students' written test achievements. The experiment design refers to the plan of six specific contents and knowledge that we planned to improve students' written test achievements. The experiment design can be constructed by determining, setting, and establishing variables of students' written test achievements in the experiment. Include independent variable content knowledge, including experimental variables and other variables that exist reliably.

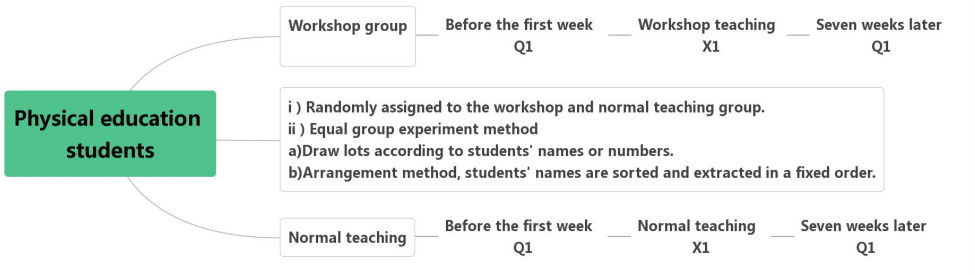
1) The first part studies the design process. Next, the research design uses a quantitative research design.

The research design uses a quantitative research design. According to the specific design of the experiment, we intervene with the experimental and choose true experimentally. according to this type of experiment, we adopt type 1 true experimental. It includes the pre-test post-test control group. It combines the samples and periods of the 6-week test on the influence of content knowledge on students' written test achievement and is based on the pre-test post-test control group standard teaching. We focus on students' content knowledge test before the test (before the first week) and after the test (after the sixth week). In the six-week content knowledge intervention, the researcher conducts an experimental and control groups experiment. Individuals in the experimental group receive the experimental treatment, whereas those in the control group do not.

Table 1.Effect of 6-weeks content knowledge workshop on written test performance--research designs

Pre- and Posttest Design — Time

Random assignment	standard teaching Group	Pretest Before the first week,	No Treatment	Posttest After the sixth week
Random assignment	Workshop Group	Pretest Before the first week,	Experimental Treatment	Posttest After the sixth week



The second part is an introduction to research and design.

i) Definition of this experiment.

On the one hand, according to the nature of educational evaluation measurement, the experiment belongs to achievement tests because achievement tests are used to examine students' mastery of specific learning experiences that have occurred and to measure students' learning effects (Kellogg, 1997).

Six weeks' content knowledge is the measurement content. In addition, the test content classification description is based on achievement tests. Achievement tests are divided into comprehensive achievement tests and single-subject achievement tests. Based on the 6-week content knowledge classification, the test belongs to the complete achievement test. Finally, the achievement test is compiled and analyzed. The establishment of achievement tests includes standard teachingized achievement tests and teacher's self-made achievement tests.

This research design is a standard teachingized test because this research achievement test was evaluated by six experts in the field of content knowledge. Six experts, including three American experts and three Chinese content knowledge experts, demonstrated. Three American experts are doctoral supervisors at Ohio State University, and they are essential researchers and discoverers of content knowledge.

ii) Choice is an true experiment.

The experimental control in actual experimental design strictly obeys the three basic principles of repetition, randomization, and local control. In addition, actual experiments comprise the most rigorous and robust experimental methods because of equating the groups through random assignment. In actual experiments, we randomly assign students to workshop groups and standard teaching groups. Individuals in the workshop group receive the experimental treatment, whereas those in the standard teaching group do not. After we administer the treatment, we compile average (or mean) scores on a posttest. One variation on this design is to

obtain pretest as well as posttest measures or observations. When we collect pretest scores, we will compare net scores (the differences between the pre-and post-test).

At the same time, in the design of the influence of 6 weeks' content knowledge on students' written test achievements, we must: a) Randomly select and allocate subjects. b) Accurately manipulate independent variables. c) Strictly control the effect of extra variables or evenly disperse interference variables.

Table 5. Two-way Breakdown of 6-weeks Content Knowledge Design

Content		CAQs	MAQs	T/F AQs	SAQs	EAQs	Knowledge	Understanding	Application	Analysis	Synthesis	Judgment	Score
Sports Training Design	Classify				√	√	-	-	5	5	5	-	15
	Application					√							
Basketball Class Hour Teaching Plan	Objectives				√	√	5	5	-	5	5	-	20
	Contents												
	Steps				√	√							
Energy Supply System	Three Systems					√	5	-	-	5	5	-	15
	Source		√										
Exercise prescription	Conceptual	√					-	-	5	5	5	-	15
	Elements		√	√	√								

Bloom divided the teaching objectives of cognitive activities into six sides： knowledge, understanding, application, analysis, synthesis, and judgment. The first two parts are the learning and understanding of knowledge; the last four parts are applying knowledge. Use six different levels to exam content knowledge

3. Intervention Plan

Table 6. Intervention Plan Design

Group	Experiment Group -Workshop			Control Group - standard teaching teaching		
Week	1-2	3-4	5-6	1-2	3-4	5-6
Content Knowledge Category[1]	Sports Training Design And Teaching Design	Muscular Functional System And Exercise Physiological System	Competition Venue Planning And Referee Rules	Sports Training Design And Teaching Design	Muscular Functional System And Exercise Physiological System	Competition Venue Planning And Referee Rules
	i) Basketball Weekly Training Plan ii) Basketball Class Hour Teaching Plan	i) Energy Supply System ii) Exercise Prescription	i) Track And Field Venue Planning ii) Basketball Rules	i) Basketball Weekly Training Plan ii) Basketball Class Hour Teaching Plan	i) Energy Supply System ii) Exercise Prescription	i) Track And Field Venue Planning ii) Basketball Rules
Workshop	Workshop Criterion 1			Workshop Criterion 1		
standard teaching	Consistent Criterion					
Duration Time	3 Hours / Total Hours 18			1.5 Hours / Total Hours 18		
Frequency	1 Time / Week			2 Times / Week		
Number Of Week	6 Weeks			6 Weeks		

[1] Article 27 of the "Interim Regulations on Public Recruitment of Public Institutions". Written test subject category. Primary and secondary school teachers (Class D).

General intervention plan design is an overall overview of the experiment. The whole experiment is divided into two interventions (workshop group and standard teaching group), mainly analyzed from two aspects (same and different). Detailed analysis, one is that the two groups have the same 6-week intervention, the total time is the same, and the intervention content is the same. The second is that it doesn’t work. Workshop once a week, once every 3 hours. standard teaching group twice a week, once for 1.5 hours.

Table 7. Intervention Plan-Same Characteristics

Content	Workshop Group and standard Teaching Group
Teacher qualification	Same qualification and titles
	Both have one teacher
	Same teaching experience and research area
Student qualifications	Same age , PE students No students have received this courses prior to the study

The analysis of intervention Plan-same characteristics mainly includes two parts: Teacher qualification and student qualifications. In the first part, workshop group and standard teaching group, teacher Qualification, same qualification and titles, both have one same teacher majors: physical education, similar experience: minimum more than ten years.No students have received this courses before the study. The second part is the age, major and educational background of students. Students with similar educational backgrounds, aged between 19 and 25, are all majors in physical education.No students have received these courses before the study.

Table 8. Six-weeks Workshop and standard teaching Intervention Details

Week	Content[2]		Workshop group		Week	standard teaching group
1	Basic theoretical knowledge	Sports training design	Weekly basketball training plan	3H/1time/week	1	Weekly training plan [3] 1.5H / 1 time / week.
						Weekly training plan 1.5H / 1 time / week
2		Teaching design	Class hour basketball teaching plan	3H/1time/week	2	Class hour teaching plan[4] 1.5H / 1 time / week.
						Class hour teaching plan 1.5H / 1 time / week.
3	Health promotion knowledge	Muscular functional system	Energy supply system	3H/1time/week	3	Energy supply system[5] 1.5H / 1 time / week.
						Muscle exercise 1.5H / 1 time / week.
Week	Content[6]		Workshop group		Week	standard teaching group

[2] Xia Jinyang. Thinking about the proposition width of sports theory test questions [J]. Sports Culture Guide, 2010,{4}(08):79-82+90.
3 Tian maijiu. 《Sports Training》. Beijing: Higher Education Press, July 2006. Chapter 12. Weekly Training Plan and Organization Plan. p369-397.
4 Mao Zhenming. School Physical Education, 3rd Edition. Beijing: Higher Education Press, July, 2017. Chapter 8. Physical Education Teaching Design and Plan. Class Hours Teaching Plan (Teaching Plan) 131-142.
5 Deng Shuxun. Exercise Physiology. Beijing: Higher Education Press, July 2005. Chapter 1: Energy supply of muscle activity. Three systems of energy supply of muscle activity. P11-20.
6 Article 27 of the "Interim Regulations on Public Recruitment of Public Institutions". Written test subject category. Primary and secondary school teachers (Class D).

4		Exercise physiological system	Exercise prescription	3H/1time/week	4	Exercise prescription[7] 1.5H / 1 time / week.
						Exercise prescription 1.5H / 1 time / week.
5	Physical exercise knowledge	Competition Venue planning	Track and field venue planning	3H/1time/week	5	Track and field venue planning 1.5H / 1 time / week.
						Track and field venue planning[8] 1.5H/1time/week.
6		Referee rules	Basketball rules	3H/1time/week	6	Basketball rules[9] 1.5H / 1 time / week.
						Basketball rules 1.5H / 1 time / week.

This part discusses the details of the 6-weeks workshop and standard teaching intervention. First and foremost, CK includes three categories. The deeper level is divided into six parts; the specific content has methods and plans, Basketball weekly training plan, Basketball class hour teaching plan, Energy supply system, Exercise prescription, Track and field venue planning， Basketball rules. On the other hand, there are two lessons; each class is 1.5 hours.

7 Deng Shuxun. Exercise Physiology. Beijing: Higher Education Press, July 2005. Chapter 3 Physical Fitness and Exercise Prescription. P229-235.
8 Li Hongjiang. Track and Field, Beijing: Higher Education Press, June 2014. Chapter 6 Basic knowledge of track and field. Design and layout of track and field. P104-111.
9 Wang Jiahong. Basketball, Beijing: Higher Education Press, December, 2015. Chapter 17 Referees in Basketball Match. Main Referees in Basketball Match. P291-299.

This is a one-class training plan, mainly divided into other structures. A training session explicitly includes three parts.

To start with, the intervention content Specifically including step 1-An overview, and introduction, step 2-Students formed groups, step 3-Oral test assessment. The first part includes: The teacher introduced the purpose of the study, expectations, and discussion of the principles of sports training design. They were learning content related to design and muscle function and exercise physiology system—rest time.

The second part includes, The teacher introduced the purpose of the study, expectations, and discussion of the principles of sports training design. They were learning content related to design and muscle function and exercise physiology systems. Rest time Divided into three groups and rotated roles of teacher, students, 8 / group. They were learning by the reciprocal peer learning instructional model.

The third part includes the teacher introduced the purpose of the study, expectations, and discussion of the principles of sports training design. They were learning content related to design and muscle function and exercise physiology systems. Rest time Divided into three groups and rotated roles of teacher, students, 8 / group. They were learning by the reciprocal peer learning instructional model. Students were prompted to switch teacher roles, student every 10 min—evaluation through check sheets and oral test (90% or better correct answers).

On the other hand, time allocation, including specific time allocation.

Table 9. Workshop Methods-Class Hours Teaching Plan

Content	Workshop -Intervention （I）- 3 Hour/1 times / Week		Time-Minute
One lesson Training plan	Part 1 An overview and introduction	a) The teacher introduced the purpose of the study,expectations. b) Discussion of the principles of sports training methods and plans. c) Show the content knowledge in the situation with charts.	4 3 3
		a) Learning design. b) Muscle function. c) Knowledge of sports physiological system content .	10 10 10
		Rest time.	10
	Part 2 Grouping teaching	a) Have group discussions with students. b) Divided into three groups and rotated roles of teacher, students, eight people in each group. c) They are learning by the reciprocal peer learning instructional model.	10 20 10
	Part 3 Oral examination assessment	a)Teachers use questions to guide students to think and discuss. b)Students were prompted to switch roles of teacher, student every 10 min. c) Teaching explanation and demonstration. d) Students discuss and reflect.	10 10 10
		The oral test requires that the correct rate of answers is greater than 90%. a) Encourage students and give good behavioral performance. b) True and false questions performance. c) Essay questions performance.	20 20 20

Table 10. Workshop Methods-Class Hours Teaching Plan

Content	Workshop -Intervention （II）- 3 Hour/1 times / Week		Time-Minute
Track Meet Rules	Part 1 An overview and introduction.	a) The teacher introduced the purpose of the study, expectations. b) Discussion of the principles of sports training methods and plans. c) Show the content knowledge in the situation with charts.	4 3 3
	Part 2 Watching the workshop video clips.	Students are asked to watch instructional videos.	20
		a) Teachers focus on teaching specific steps. b) Common mistakes. c) Correcting mistakes.	10 5 5
		Students are asked to explain or demonstrate teaching tasks.	20
		Rest time.	10
	Part 3 Oral examination assessment.	a) Have group discussions with students. b) Divided into three groups and rotated roles of teacher, students,Eight people in each group. c) They are learning by the reciprocal peer learning instructional model.	10 10 10
		Students were prompted to switch roles of teacher,student every 10 min.	10
		The oral test requires that the correct rate of answers is greater than 90%. a) Encourage students and give good behavioral performance. b) True and false questions performance. c) Essay questions performance.	20 20 20

Three hours workshop intervenes in specific content and specific time. Take a workshop as an example to analyze; the others are only different in scope, time, and intervention steps are the same. The workshop consists of 3 stages. To begin, the intervention content. The first stage includes an overview and introduction； The second stage comprises watching the workshop video clips； The third stage comprises oral test assessment. In addition, this essay will discuss time allocation.

Table 11. standard teaching -Class Hours Teaching Plan

Content	Total 1½ Hour / 2 Times / week			Time Minute
One Lesson Training plan	**Part 1 Beginning part**	Teaching objectives	Skill objective.	**5**
			Participation objective.	**5**
			Health objective.	**5**
			Social adaptation objective.	**5**
		Contextual import	Improve students' interest in teaching objectives.	**5**
	Part 2 Basic part	Students	Answer the questions.	**5**
			Perception of the teaching material.	**5**
			Active learning.	**5**
			Understanding of the teaching material.	**10**
			Consolidate the knowledge.	**10**
		Teachers	Rest time.	**10**
			The leader of the teaching.	**5**
			Explain the content.	**5**
			The teaching method.	**5**
	Part 3 End part	Teacher and student	Summary.	**3**
			Homework.	**2**

Based on the three-hour standard teaching intervention, the specific content of the intervention, and the particular time statistics.Take standard teaching as an example to analyze; the others are only different in scope, time, and intervention steps are the same.

This part discusses the details of the 6-weeks workshop and standard teaching intervention. First and foremost, CK includes three categories. Then, the deeper level is divided into six parts: methods and plans, class hour teaching plan, muscle exercise, energy supply, breathing and exercise circulation and exercise, athletic and basketball venue, basketball, and football rules. On the other hand, there are two lessons; each class is 1.5 hours.

4.Intervention Plan Summary

Workshop group refers to the physical or sports education curriculum teaching model. Theme: Sports education curriculum mode: 6 hours of basketball as an example.

Part 1: Teaching Steps: 1. Use diagrams to show combination exercises in situations；2—Group discussion with students；3. Teachers use questions to guide students to think and discuss；4—teaching explanation and demonstration； 5. Student exercises Discussion and reflection.

Part 2: Main features: 1. Give students behavior scores； 2—actual combat situation teaching mode.

Part 3: The actual combat situation teaching curriculum model: a)Motivation, All of the above characteristics can explain why the existing combat situation teaching curriculum model is stimulating.

First of all, real learning content can help students understand the meaning of learning this teaching content. When students know why they do certain things, students may be more willing to participate in the activity. As students become more involved, their skills and knowledge continue to increase. The constant sense of accomplishment may also make them more willing to continue participating in the activity. Second, students can find themselves more, including the sense of belonging to knowledge, technology, and a specific group and improving self-worth and cognition. Third, as students become more adept at the sport, the positive feedback from teachers and the ever-decreasing corrective comments will also make students aware of their progress. Fourth, teachers serve as role models to provide students with mature exercises related to real life. Finally, each situation combination exercise is presented to students in the form of questions. These questions can motivate students to participate and use critical thinking to solve these problems actively.

b) Features of the actual combat situation teaching curriculum model: Cognition and problem-solving-all practical situation- combination exercises solve a problem for students. Decision-making based on issues allows students to learn how to make decisions in a particular game situation:

1) What to do (tactical awareness); 2) How to do it (technical and tactical implementation); 3) When to do it (time); 4) The question of where to do it (space). Adapt to physical and mental development-refers to the teaching content is adapted to the student's age, technical level, cognitive and physical development. All teaching content is excavated from the actual game situation of the corresponding age group, which is representative and can reflect the technical and tactical learning suitable for that age group.

c) What is situational game teaching through Set plays? The state game scene can be expressed as a pre-defined relationship action plan, including rules, player positions, blank areas, techniques, strategies, and tactics. In this model, technologies and processes are planned in detail according to the level of development. Techniques and procedures are fully integrated with other variables in the game and learned from the state of the game scene. Therefore, skills are not isolated but holistic and related. The situation of every situational game is accurate, and it reflects the status of the game. Students studying physical education can use their skills in extracurricular sports and recreational activities without losing meaning in a precise learning environment.

5.Location

The Ning Xia University of China. In terms of students, the proportion of people who choose to work is high, while the proportion of people who choose to continue their postgraduate entrance tests is negligible. Sports graduates account for 70% of Ning Xia Province, and students have not participated in workshop study. On the school side, the school has perfect teaching equipment to meet the experimental requirements, conducive to better completion.

6. Measurement and Instrumentation

This part discusses the specification allocation, processing, instruments used—highlights on the instruments or their description. The specific analysis is as follows. First, the definition of daily instruments: including learning task list, student attendance sheet, student score sheet, Teaching intervention plan design, workshop method-class teaching plan, standard teaching -class teaching plan, population and sample scale, daily observation file, observation record sheet, notebook, pen, and notebook. Second, description of Written test instrument: it includes achievement test, score test table, two-way decomposition table, diagnostic test table, test reliability analysis table, data analysis table, and written test paper. Third, necessary instrument description, microphone, slide photography, camera, electronic whiteboard, classroom, projector, video camera, tape recorder, mini-classroom, multimedia classroom, and daily appliances.

7. Measurement Analysis

i) Calculate mean $\bar{x}$ and standard teaching Deviation S

ii) Statistical Processing of the Distribution of Overall Physical Performance

iii) Test Reliability Analysis

$$r_{值} = \frac{K}{\quad} \left| 1 - \frac{\overline{\quad}}{\quad} \right|$$

iv) Test Validity Analysis

$$R_{效} = \frac{\sum (X-\bar{X})(Y-\bar{Y})}{\sqrt{\sum (X-\bar{X})^2 \sum (Y-\bar{Y})^2}} = \frac{1_{XY}}{\sqrt{1_{XX} * 1_{YY}}}$$

$$1_{XX} = \sum X^2 - \frac{(\sum x)^2}{n} \quad 1_{yy} = \sum y^2 - \frac{(\sum Y^2)}{N} \quad 1_{YY} = \sum {}_{XY} - \sum \frac{(\sum x)(\sum y)}{n}$$

8.Distinguish between reliability and validity.

i) Defines related concepts.

Reliability is one of the factors that researchers need to consider during testing or evaluation. Specifically, it refers to the consistency or stability of test scores (Johnson et al., 2015).In educational testing, reliability refers to the consistency and stability of scores on a set of tests (Huang, 2012). Reliability Coefficient. The reliability of test scores must pass the empirical test. Reliability is usually calculated from some correlation coefficient. The reliability coefficient expresses empirical verification. The correlation coefficient calculated in measuring reliability is the reliability coefficient. A reliability coefficient of 0 means no reliability, a reliability coefficient of +1.00 means the best reliability, and a negative coefficient implies no reliability. The methods to calculate reliability include test-retest reliability, equivalent-form reliability, internal consistency reliability, and inter scorer reliability.

Validity, the accuracy of inferences or explanations derived from test scores. Validity is interpretation and belief based on test scores (AERA, APA, & NCME, 1999; Messick, 1989）.Validity requires validity evidence, and validation is a review process to collect valid proof. The valid evidence collected by educational researchers mainly includes content-related evidence. Evidence-based internal structure includes factor analysis, homogeneity, and evidence-based on other variable relationships, such as concurrent evidence. The validity includes external validity and internal validity. Intrinsic validity refers to the range in which results can be accurately explained. External validity refers to the people, situations, and conditions under which the results can be popularized.

ii) The relationship between them.

The relationship between reliability and validity. Reliability is a necessary condition for validity but not a sufficient condition. There must be reliability to ensure validity. Reliability cannot ensure validity.

iii) Explain how to measure the reliability and validity

First of all, we must do understanding and testing the validity.Reliability and validity are the two essential characteristics measured by "The effect of a 6-weeks content knowledge workshop on written test performance". Reliability is a statistical concept, and reliability is consistency. The measurement method measures each object Consistency of results, the consistency of the results obtained by measuring the same individual at different times (William Wilsmar, 2010). Reliability is related to errors. The greater the error, the lower the reliability, and the smaller the error, the higher the reliability. The measured value of reliability is the reliability coefficient, the reliability coefficient (0-1). Therefore, the error must be reduced during the test of "The effect of a 6-weeks content knowledge workshop on written test performance".

In our study, validity refers to the degree to which an instrument accurately measures what it intends to measure. Three common types of validity for us to consider are content, construct, and criterion validity. Moreover, content validity indicates the extent to which items adequately measure or represent the content of the property or trait that the researcher wishes to measure. Thus, the first step in instrument development is to assess content validity about the effect of a 6-weeks content knowledge workshop on written test performance.

Second of all, another basic feature of measurement is validity. Validity is the degree to which the measuring means should achieve the measuring purpose. Validity is the adequacy of the test or survey results to the measured object, especially to the specific research purpose. The measuring validity includes the basis related to content, calibration, and structure. For example, the validity of "The effect of a 6-weeks content knowledge workshop on written test performance" is directly related to "the basis related to the content." Construct validity indicates the extent to which a measurement method accurately represents a construct in the "The effect of a 6-weeks content knowledge workshop on written test performance" experiment. A latent variable or phenomena can't be measured directly, such as a student's learning attitude and motivation.

9.Content validity is suitable for evaluating students' achievement tests, and the test content should be based on content knowledge as a sample.

To improve the research validity, we must do the following:

i) Define the general concept of content knowledge and identify six types of content knowledge for specific intervention.

ii) Divide the outline, plan the proportion of each system according to its importance, and make a detailed description as far as possible.

iii) Determine the proportion of content knowledge of the intervention, and compare its classification with the outline of "content knowledge test preparers of educational examination institutions."

iv) We are formulating an evaluation scale to evaluate the test from all aspects.

Lastly, criterion-related validity indicates the extent to which the instrument's scores correlate with an external criterion. It is usually another measurement from a different tool (concurrent validity) or in the future (predictive validity). The standard teaching size of this type of validity is the correlation coefficient between two measures (Li, 2016). In this study, we must also consider the types of tests for reliability and validity. Therefore, we choose the achievement test. A standard teachingized achievement test is applied in experimental intervention because it ensures reliability and validity. standard teachingized achievement test-written test has been evaluated by three experts in the field of content knowledge from Ohio State University in the United States and three experts in content knowledge in China (Detailed introduction later).

v) Based on explaining how we measure the reliability and validity in my study, we will elaborate on the following three aspects:

First and foremost, in our study, based on the reliability, we will use the test-retest reliability method to evaluate. Test-retention reliability refers to the consistency and stability of test scores in six weeks. For example, test-retest reliability is used to assess the influence of six weeks' content knowledge on students' written test achievement. In the first step, the experimental group was given a test, and then the experimental group was given another test 1-2 weeks later. By analyzing the achievements of two written tests, if the achievements of two written tests are highly correlated, the test scores are credible.

Moreover, the validity. Based on the analysis of content validity. In our study, we defined this method as usually a logical analysis. That is to say, not only it focuses on the six-week content knowledge validity analysis, but it also relies on experts to analyze all the questions in the written test and classifies all the questions bidirectionally according to the content distribution and examination objectives of the written test, thus completing the "two-way breakdown of 6-weeks content knowledge examination". Then, based on the analysis of "Two-way breakdown of 6-weeks content knowledge examination", experts commented and judged the satisfaction of the content validity of written test measurement. "Two-way breakdown of 6-weeks content knowledge examination" reliable and valid analysis. According to the validity and reliability requirement, we completed its design(Yan, 2011). In this process, we should pay attention to the following problems: compare the consistency between the content of the highlighted test and the content knowledge, and divide the proportion according to the content knowledge of 6 weeks. Determine whether the test content fully covers the scope of the conceived content. Examination questions must be consistent with measurement objectives. Students' achievements in 6 weeks' content knowledge will be tested by written tests, requiring objective grading and scoring standard teachings.

In the last place, comprehensive factors. Ensure that the sources of reliability and validity are similar to those of college students majoring in physical education. Master the characteristics of standard

teaching and workshop groups be before the test. The empirical reliability data and validity data were collected before the experiment to prove that the test experiment we chose is suitable for college students majoring in physical education. The reliability coefficient comes from the Journal of educational psychology.

10.Experiment the strengths and weaknesses

a）The strengths

i) True experiments are the most rigorous and robust experimental designs because of equating the groups through random assignment. We randomly sign participants to different conditions of the experimental variable. Individuals in the experimental group(Workshop group) receive the experimental treatment, whereas those in the control group (standard teaching group) do not.

ii) pretest-posttest control-group ensures the equality of experimental (Workshop group) combination control (standard teaching group) group before intervention.

ii) Achievement tests are widely used in educational experiments, and students' achievement tests are the most frequently tested in educational situations. Six weeks' content knowledge is the most basic test for students' written test achievement in an academic position. Generally speaking, after the end of a semester, the achievement tests are conducted, and the achievement tests are used to test later. The scores of students participating in the achievement tests can be compared with the norm data. In this experiment, after learning content knowledge for six weeks, students test it, and the test method and process are the same as achievement tests.

iii) Achievement tests include two types: An academic achievement test and a comprehensive achievement test. A study on the influence of six weeks' content knowledge on complete achievement tests students' achievement. In this study, the content knowledge is classified into six categories, and the comprehensive tests of the six categories meet the comprehensive achievement test standard teachings of achievement tests. The comprehensive achievement test can be either a single test or a complete set of tests. This study's 6-week content knowledge test can use either one of the extensive achievement tests, which is flexible.

iv) Group tests can save human resources and time. We can complete two tests within six weeks and collect 52 students' content, knowledge, achievements, and learning materials within six weeks. Moreover, group tests have been widely used in education.

b）The weaknesses

i) The random distribution in the true experimental pretest-posttest control group cannot ensure 100% equality between the experimental and control groups.

ii) We adopted the equal group experiment method. Therefore, the most significant possibility is to ensure equality between the workshop group and the standard teaching group. Still, we only

achieved equality between the workshop group and the standard teaching group in the total average number. The weakness lies in not achieving equality in the "mean difference" and "standard teaching deviation."

iii) Group test, the interviewee's reaction is not easy to control. Moreover, it is not easy to analyze the influence of individual students' learning motivation, learning fatigue, and other factors in group tests or examinations. Thus, it is not conducive to diagnosing students' learning situations and the specific guidance of students' learning difficulties.

iv) In the whole experimental design, the independent variables only focus on content knowledge, so more interference variables and interference information are excluded. However, it is challenging to eliminate interference factors, which reduces the precise controllability of the experiment.

11.Data Collection

Number of written test and Sampling Categories.Number of test papers and sampling categories.categories test paper (data <100) by random sampling (stratified sampling by class) (Liu et al., 2001).

11.1 Calculate Mean and standard teaching Deviation

Calculate $\overline{X}$ & (S) $\overline{X}$ represents the average level of the theory test, and S represents the discrete state of scores.The smaller the S, the more concentrated the performance (Liu, 2001) .

11.2 Statistical Processing of the Distribution of Overall Physical Scores

The test performance is standardly distributed, and the test papers are reasonable—the average difficulty of non-standard distribution+—bimodal distribution results from the problem.

12.Data Analysis

Table 12. Data Analysis - Base on Hypothesis

Research Objective	Research Hypothesis	Data Analysis
1.Basic theoretical knowledge	1.1 There is significant difference between the control group and the experimental group in the Sports training design written test performance among P E students in China.	Two-way ANOVA
	1.2 There is significant difference between the control group and the experimental group in the Teaching design written test performance among	Two-way ANOVA

	P E students in China.	
2.Health promotion knowledge	2.1 There is significant difference between the control group and the experimental group in the Muscle function system written test performance among PE students in China.	Two-way ANOVA
	2.2 There is significant difference between the control group and the experimental group in the Exercise physiology system written test performance among PE students in China.	Two-way ANOVA
3.Physical exercise knowledge	3.1 There is significant difference between the control group and the experimental group in the Competition venue planning written test performance Among PE students in China.	Two-way ANOVA
	3.2 There is significant difference between the control group and the experimental group in the Referee rules written test performance among PE students in China.	Two-way ANOVA

Based on the research objective, focus on the research hypothesis. To achieve the research hypothesis, we must use t-way ANOVA analyses.

13.Risk analysis of total failure in the data collection process.

a) Validity and Reliability

Validity and reliability are two essential factors to consider when developing and testing any instrument (e.g., the effect of a 6-weeks content knowledge workshop on written test performance) for use in a study. Attention to these considerations helps ensure the quality of our measurement and the data collected for our research.

To start with，the reducing the risk of failure during data collection must analyze What is Reliability? The concept of reliability can be looked at from two sides:

i) Focus on the ability of an instrument to produce consistent measurements. The experiment mainly focuses on the written test, which must refer to the Education Examination Center and form a standard teachingized written test based on experts' evaluation in content knowledge.

ii) Focus on the degree of consistency in the measurements made by an instrument. Reliability only deals with the surface of the measure, regardless of precisely what it is measuring. Thus, a measure can be reliable without being valid.

iii) Concerns with consistency, replicability, dependability: Consistency – test the consistently yields the same score for an individual. Consistency mainly focuses on the surface of the workshop group and standard teaching group. Hence, consistency and reliability mainly deal with validity and reliability.

On the other hand, based on the 6-week content knowledge experiment, we must provide research to answer specific questions. We need to make a plan, outline it, or determine the strategy adopted to collect data. To achieve this goal, we must first clarify the independent variable workshop and the dependent variable students' written test achievements. Besides, other factors, such as validity, are necessary. Including internal validity, external validity, and construct validity. The specific analysis is as follows:

First, because it will confuse research results, it is not controlled and must be excluded. Especially extra variable, extra variable (confiding variables), embodied in students and teachers in the experiment. For example: when experimenting, the temperature of the weather, the mood of teachers and students, teachers month students' sleep and diet. We have no absolute control. But these impact factors happen so often that there is no need to control for them.

Moreover, different selection. The other section is the threat factor of internal effects in the research. Therefore, it is necessary to distinguish the invariable and the extra changeable variable and control the non-experimental facets: one is variable, and the other is unchanged. The varying experimental factors may be a favorite or unfavorable to the experiment. People have biased opinions and different points of view about everything.

Finally, some measures can be taken based on the above collection of the risk of failure during data. But, first, do an excellent job of equal grouping, and control that everything must be the same except the intervention methods of the workshop and standard teaching .

i) We must do an excellent equal group experiment, divided into the workshop and standard teaching groups. Random sampling uses selective measurement and selection methods. First, before the intervention, pro-test measures the original students' content knowledge level. Then, after measurement, they are sorted according to the scores, ranked according to the sequence position, and equally assigned to each group.

ii) People with attitude bias cannot participate in the experiment. If the experimenter finds himself biased, he should avoid wrong opinions.

iii) The experiment must be recorded in detail. The person in charge of the experiment has to make a detailed record of the experiment as a reference for data sources.

iv) We must eliminate the potential confusion of irrelevant variables, make our research reliable, and draw a compelling inference that the relationship between workshop and students' written test achievements.

14. Executive Summary

The employment survey of Chinese students found that it is very difficult for students majoring in physical education to find jobs. The analysis found that the main factor causing employment difficulties is that Chinese students have low written test achievements. However, content knowledge determines the student's written test achievement. Therefore, to solve student employment difficulties, the student's written test achievement and improving the students' written test achievement through experimental design and quantitative research methods.

This experiment aims to use two different teaching methods to intervene in students' learning and find out which teaching method is more conducive to improving students' written test achievement. The experiment will use a 6-week workshop intervention to enhance students' written test achievement. The investigation is divided into workshop groups and standard teaching groups. The most significant difference between the two groups is that the workshop group has oral links and guarantees. The similarities between the two groups are:

a) The same teacher qualifications. b) The same intervention time. c) The same content.d) The same research objects.

Based on content knowledge learning, content knowledge is divided into six categories for detailed intervention. First, we will do a 6-week intervention for two groups (workshop style and standard teaching style). After that, we will assess their progress based on writing tests that the Examination agency develops. The difference between the two is whether there is a video teaching link, and the same is that there are oral links. The entire experiment was carried out in the classroom with the school's consent. Use written exams to check student scores. Students have special teachers responsible for teaching specific content knowledge during class, standard learning after class does not require special care, and the experiment is not risky. This experiment aims to provide a theoretical basis for improving teaching methods. As a result, it increases the employment rate of students and eases the employment pressure of students.