# Construction of Ideological and Political Education in Universities Based on Intelligent Digital Education

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*Abstract:* With the development of the times, there is an increasing emphasis on Ideological and Political Education (IPE) for students. Good IPE can improve the quality of students, and enable them to become better citizens in the society. This paper studied the construction of IPE in universities based on intelligent digital education, which aimed to study whether intelligent digital education could improve the quality of IPE. This experiment selected a school that used intelligent digital education and a school that used traditional education. By comparing the results of the five classes of Mao Zedong Thought and the theoretical system of socialism with Chinese characteristics, the principles of Marxist philosophy, the situation and policy, ideological and moral cultivation and legal basis in the two schools, the role of intelligent digital education was highlighted. The scores of Mao Zedong Thought and the theoretical system of socialism with Chinese characteristics in the five classes using intelligent digital education were 86, 90, 92, 87, and 85 respectively. The scores of the five classes using intelligent digital education on the principles of Marxist philosophy were 79, 75, 73, 71, and 78 respectively. The situation and policy scores of the five classes using intelligent digital education were 70, 74, 79, 82, and 77. The scores of ideological and moral cultivation and legal basis of the five classes using intelligent digital education were 85, 90, 93, 88, and 92 respectively. Compared with the traditional IPE, these data had a good improvement in the test scores of students, which proved that intelligent digital education was really helpful for IPE in universities.

## 1. Introduction

Universities are places for cultivating talents in socialism with Chinese characteristics, and Ideological and Political (IP) courses are the core courses. The IP work in universities is related to the cause of the Party and the people. By facing the impact of western ideas and new ideas generated in the process of social transformation, only by doing a good job in IPE in universities can the all-round development of college students' morality, intelligence, physical and aesthetic be guaranteed.

Many scholars have different views on IPE in universities. Wu J believed that university

education management departments and subject teachers should collect and integrate IP knowledge from different majors around the teaching concept and content of "IP course", so as to introduce it into professional courses. In online and offline teaching, the existing classroom teaching situation, teaching content and teaching methods should be organized and innovated to guide students to participate in IP theory learning, campus activities and social practice activities [1]. Ting L believed that IPE for graduate students was an important part of IPE in universities. It was the core of building a socialist modern educational power [2]. Through exploratory analysis, Wu R summarized a series of positive effects of situational inquiry method in the research-based teaching of IP courses, such as improving classroom teaching effect, advancing students' comprehensive quality, and promoting teachers' professional development and teaching quality [3]. Li S believed that the use of innovative education tools to actively innovate the IPE of college students had become the focus of attention of IP workers in universities [4]. IPE in universities played an important role in today's college education. If IPE was combined with intelligent digitalization, it would have a better effect.

The IP courses of intelligent digital education can strengthen students' learning of IP courses, and can achieve good learning results. Li M believed that IP courses were systematic and coherent in content, but there were still some problems in IP work in universities, which could be solved by combining with the traditional advantages of IP work [5]. Zhao J believed that the significance of IP teaching and the strategy of effectively integrating intangible cultural heritage into IP teaching were to achieve the educational purpose of advancing patriotic enthusiasm and cultural self-confidence [6]. On the basis of consulting relevant literature and actual teaching experience, Ying L explored an effective way to integrate IPE elements into the teaching of massage courses, and put forward ideas for the reform of massage IP teaching [7]. Liu D believed that it was necessary to thoroughly sort out and find the combination of IP elements and curriculum, and pay attention to cultivating students' political quality. According to the psychological characteristics of students, talent training programs should be designed. Through a variety of ways and methods, the IP elements in the professional curriculum should be excavated, and the IPE should be integrated into the professional curriculum [8]. How to do better in IPE was an eternal topic, and the work of improving the quality of IPE needed to be completed by contemporary joint efforts. Intelligent digital education was a reform and innovation of IPE by contemporary people, which was of great significance for improving the quality of IPE.

There are still some problems in the IPE in universities nowadays, such as the low quality of IPE. This paper collected the scores of the IP course examination items of the intelligent digital education schools and the scores of the IP course examination items of the traditional education schools through experiments. By comparison, it was found that schools using intelligent digital education had better performance, which showed that the combination of intelligent digital education and IPE had great value.

## 2. Construction of IPE in Universities

### 2.1 Current Situation of IPE in Universities

Today's IPE has not formed a correct cultural value orientation, and IPE is divorced from the IP major. With more and more cultural communication in the world, it has a serious impact on China's ancient traditional values. The traditional IPE can no longer meet the needs of current college students. Affected by the original education model, the transformation of the market and the fierce competition in society have made college students excessively concerned about material interests. The lack of IP awareness is an urgent problem for college students. However, students' value orientation is unclear, so it is difficult for university teachers to grasp the starting point of IP work. University teachers' wrong teaching thinking and teaching ideas would seriously affect the

establishment of college students' IP concepts, which would have a negative impact on the construction of college IPE.

The virtual culture also affects the IPE in universities. As a virtual public resource and compared with normal cultural exchange, this kind of network cultural exchange would have a great impact on traditional Chinese culture and have a negative impact on students' IPE.

Today, the global IPE would usher in digital transformation, and the talent demand would gradually change. Major universities around the world have gradually attached importance to IPE resources and the development of intellectual digitalization of IPE.

## 2.2 IPE in Universities with Intelligent Digital Education

### 2.2.1 Introduction to Intelligent Digital Education

Intelligent digital education is to digitize knowledge through scientific means, and use Artificial Intelligence (AI) technology to strengthen learning algorithms to let machines master students' learning knowledge. This can form a personalized knowledge map and formulate a learning route suitable for students, which would overturn the traditional education mode. Intelligent digital transformation is the most concerned issue of senior global leaders, and these leaders promote the development of intelligent digital [9]. Intelligent digital technology has penetrated into many areas of personal life [10]. The concept of intelligent digitalization has been put forward in recent years to emphasize the potential cross-effect between intelligent digitalization and sustainable development [11].

### 2.2.2 Use of Intelligent Digitalization in IPE

With the rapid development of intelligent digitalization, knowledge sharing and Internet teaching have become popular. Universities need to use the Internet and digital technology to better carry out IPE for students. The convenience and efficiency of intelligent digitalization in IPE make more and more universities gradually use this innovative education model. Digital education has made it possible to transform the way of teaching students according to their aptitude. The era of intelligent digitalization allows students to learn more digital skills, and also tests whether teachers can change their teaching methods and master the intelligent digitalization teaching methods. The educational process of IPE in universities is shown in Figure 1:
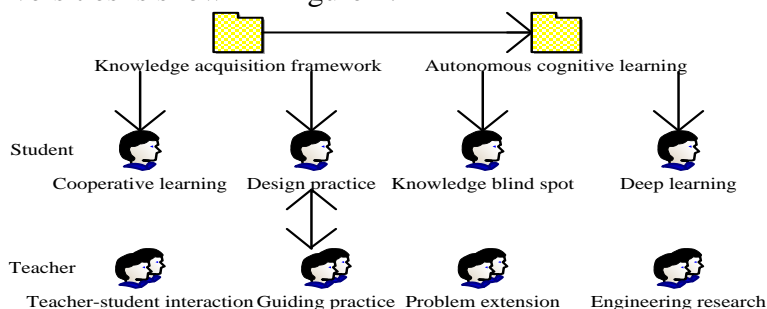


Figure 1: IPE process in universities

The types of IPE in universities are shown in Figure 2.

The development and application of intelligent digitalization has promoted the process of intelligent education, which has become the direction of traditional IPE reform. AI technology is an important technology leading the development of intelligence. Therefore, on the basis of AI, the development direction of educational intelligence should be clarified, so as to seize the major strategic opportunity of AI development and help the construction of educational intelligence.
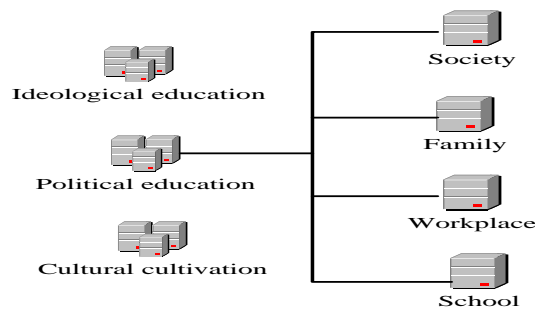
Figure 2: Types of IPE in universities

Intelligent digital education can accelerate the reform of talent training mode and teaching methods, and build a new type of education system including intelligent learning and interactive learning. In addition to the advanced education and teaching concept, intelligence in intelligent digital education can not be separated from the support of AI technology. Intelligent digital education needs to use AI technology to change the concept of IPE, and finally realize the intellectualization of IPE. At present, education is developing in the direction of intelligence and precision, which depends on the construction of intelligent digital education.

The role of intelligent digital education in IPE can be reflected in the automatic correction of homework. When students have problems with their homework, AI technology would automatically correct the errors that students have made, and even put forward suggestions for modification; the role of intelligent digital education is also reflected in personalized learning. AI can create adaptive learning experience for each student; the role of intelligent digital education in IPE is also reflected in the feedback of IPE system. Students can understand their learning process through big data.

### 2.2.3 Advantages of IPE of Intelligent Digital Education

The IP classroom of intelligent digital education can have a better teaching environment. Traditional teaching adopts a cramming teaching mode. The environment of teaching and learning is closed, and the form of teaching is fixed. The addition of intelligent education in it can create a richer three-dimensional teaching scene, and intelligent education can penetrate into all aspects of teaching, which is conducive to stimulating students' interest, learning ability and awareness of independent exploration and innovation. Students can actively change from the inculcated person of knowledge to the active participant of learning, so that students can achieve autonomous learning.

The integration of intelligent digital education into IPE has promoted the reform of teaching structure. The open teaching environment of intelligent digital education can integrate intelligent technology into media information, teaching objects and other factors, and gradually change the presentation of teaching content, students' learning methods and teachers' teaching methods. This would make the teaching objectives clearer and achieve a high degree of conformity between the course content and the teaching implementation.

The advantages of intelligent digital education are also reflected in promoting the quality of students. With the development of the times, talent has become a very needed resource for the society, and intelligent digital education would become an important driving force for the improvement of students' ability and literacy. Intelligent digital education can promote students' ability to collect and process information, analyze and solve problems, and ultimately improve students' quality.

### 2.2.4 Characteristics of Intelligent Digital Education IP Classroom

Traditional classroom education only focuses on the amount of knowledge that students master,

and it does not care about students' abilities and emotions. Intelligent digital education would focus on students' learning process, and would use a variety of technologies to observe learning behavior.

The multiple functions of intelligent digitalization add fun to group activities, and facilitate communication, so as to make classroom collaboration more active. The new technology of intelligent digital education stimulates students' curiosity and enables them to participate in the process of collaboration, which would greatly improve their ability in collaboration.

### 2.2.5 Future Prospects of Intelligent Digital Education

AI technology in education is mainly reflected in image recognition and speech recognition. The development of AI can make intelligent digital education play a greater role in IPE. Therefore, in order to make progress in IPE, the pace of intelligent digital education research cannot stop.

### 2.3 Application of Genetic Algorithm in IPE

Genetic algorithm is an algorithm in AI technology, which is widely used in intelligent digital education. With the help of genetic algorithm, the test paper generation module in college IPE can be simplified, and the workload of teachers in test paper generation is no longer so much. The intelligent test paper generation technology of genetic algorithm is the focus of intelligent digital construction in universities. Genetic algorithm is a kind of simulation of natural evolution. The next generation is generated from the population of the previous generation and forms a new population, and then the unsuitable individuals are eliminated to achieve the optimal search results. The problem of finding the optimal search result can be regarded as an optimization problem. Genetic algorithm is often used to deal with optimization problems [12]. Many engineering problems need to be optimized, so the commonly used multi-objective genetic algorithm and other methods are not enough [13]. Genetic algorithm can effectively solve the task of image classification. The greatest advantage of this algorithm is its "automatic" feature [14]. Genetic algorithms can be used in various fields [15]. The genetic algorithm optimizes the fitness function from the coding method of the test paper and the weighting function, so that it can have a better fitness, and can quickly generate the test paper, so as to improve the efficiency of generating the test paper.

Automatic test paper generation is a combination of an objective function and multiple constraints. The conditions to be met include the difficulty level of the test question, the type of the test question, the knowledge points, the total score of the test paper, the test time, the knowledge points contained in the test question, and so on. By combining these conditions, the test paper suitable for students can be formed. The score loss rate of a student in an exam is shown in Formula 1:

$$P = \frac{a}{b} \tag{1}$$

In Formula 1, b is the total number of people who answered the question correctly, and a is the total number of people who answered the question incorrectly.

It is assumed that X is the total number of knowledge points included in the test paper and Y is the total number of knowledge points required to be included in the test paper. The coverage rate of knowledge points in the test paper is shown in Formula 2:

$$M = \frac{X}{Y} \tag{2}$$

In Formula 2, X is the number of knowledge points after de-duplication, so the number of X would be less than or equal to Y.

The frequency of the selected questions in the test paper is shown in Formula 3:

$$N = \frac{F}{Q} \tag{3}$$

The test questions cannot be used again for a period of time after being selected, so the frequency of selection needs to be controlled. In Formula 3, F is the number of times the test questions are selected, and Q is the total number of selected test questions.

The test questions need to be differentiated. If the students' scores are sorted from high to low, the high score group is marked as z and the low score group is marked as s. Formula 4 is as follows:

$$v = \frac{z - s}{t} \tag{4}$$

Among them, the value range of v is 0 to 1, and t is the true score of the test question.

The difficulty of the test paper is the ratio of the product of the difficulty and score of the test paper to the total score. The difficulty of the test paper is shown in Formula 5:

$$G = \frac{\sum_{i=1}^{n} w_i * t_i}{H} \tag{5}$$

In Formula 5, $w_i$ is the difficulty of the ith test question; $t_i$ is the score of question i; n is the total number of test questions; H is the total score.

## 3. Experiment of IPE in Universities under Intelligent Digitalization

IPE in universities was always the core content of college education. This paper selected a university that uses intelligent digital education, and collected 100 students' satisfaction with the IP courses of intelligent digital education through the questionnaire survey. The satisfaction of these 100 students with the IP courses of intelligent digital education was shown in Figure 3.

In Figure 3, 100 students' satisfaction with the IP courses in intelligent digital education was above 70 points, which indicated that students were still very satisfied with the IP courses in intelligent digital education.

This experiment also selected 10 classes from two universities, and each university had 5 classes. One university's IPE used intelligent digital teaching, while the other university used traditional teaching. After the final examination, the Average Score (AS) of the four courses of Mao Zedong Thought and the theoretical system of socialism with Chinese characteristics, the principles of Marxist philosophy, the situation and policy, ideological and moral cultivation and legal basis in five classes of two universities was compared to test whether the intelligent digital education method had the effect of improving the quality of education for IP teaching. The AS of the final examination of the five classes of Mao Zedong Thought and the theoretical system of socialism with Chinese characteristics in these two universities was shown in Figure 4. Figure 4A represented the five classes of the school using intelligent digital technology, and Figure 4B represented the five classes of the traditional teaching school.
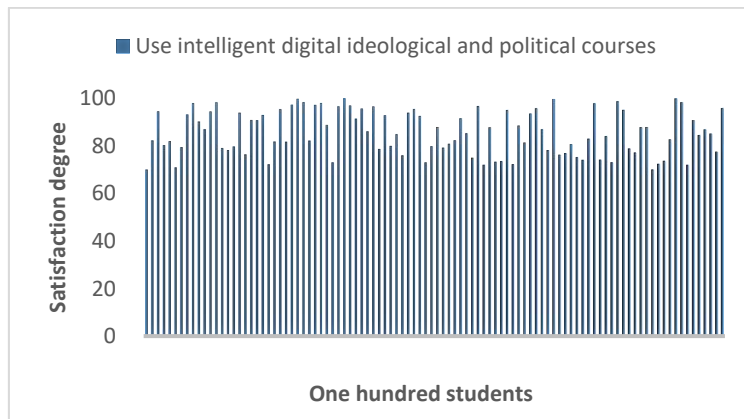
Figure 3: One hundred students' satisfaction with IP courses of intelligent digital education
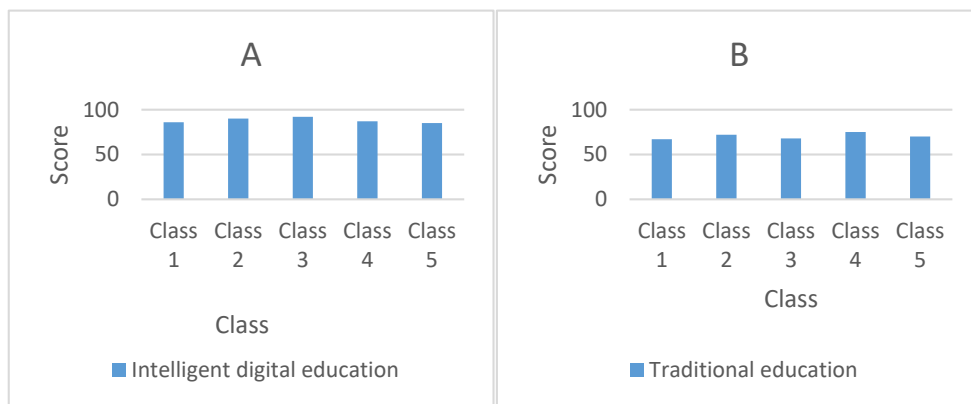


Figure 4: Comparison of test scores of MAO Zedong Thought and the theory system of socialism with Chinese characteristics

It could be seen from Figures A and B that in the comparison of the AS of the first group of classes, the AS of the Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics examinations of the class under intelligent digital education was 86 points, and the AS of the class under traditional education was 67 points. In the second group of class AS comparison, the AS of Mao Zedong Thought and the theoretical system of socialism with Chinese characteristics in the class under intelligent digital education was 90 points, and the AS of the class under traditional education was 72 points. In the third group of class AS comparison, the AS of Mao Zedong Thought and the theoretical system of socialism with Chinese characteristics in the class under intelligent digital education was 92 points, and the AS of the class under traditional education was 68 points. In the fourth group of class AS comparison, the AS of Mao Zedong Thought and the theoretical system of socialism with Chinese characteristics in the class under intelligent digital education was 87 points, and the AS of the class under traditional education was 75 points. In the fifth group of class AS comparison, the AS of Mao Zedong Thought and the theoretical system of socialism with Chinese characteristics in the class under intelligent digital education was 85 points, and the AS of the class under traditional education was 70 points. Through the comparison of results, it could be concluded that intelligent digital education was helpful for students to learn Mao Zedong Thought and the theoretical system of socialism with Chinese characteristics.

The AS of the final examination of the principles of Marxist philosophy in five classes of the two universities was shown in Figure 5. Figure 5A represented the AS of the examination of Marxist philosophy principles in the class using intelligent digital education, and Figure 5B represented the AS of the examination of Marxist philosophy principles in traditional education.
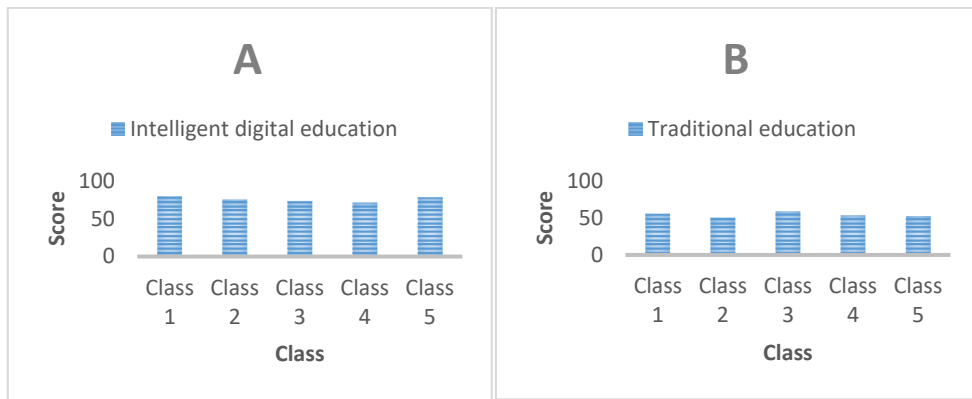
Figure 5: Comparison of scores of Marxist philosophy principles examination

According to the results in Figures A and B, it could be seen that in the first group of performance comparison, the AS of the class using intelligent digital education was 79 points for the principles of Marxist philosophy, while the AS of the class using traditional education was 55 points; in the second group, the AS of the intelligent digital education class was 75 points for Marxist philosophy principles, while the AS of the traditional education class was 50 points; in the third group, the AS of the intelligent digital education class was 73 points for Marxist philosophy principles, while the AS of the traditional education class was 58 points; in the fourth group, the AS of the intelligent digital education class was 71 points for Marxist philosophy principles, while the AS of the traditional education class was 53 points; in the fifth comparison, the AS of the class using the intelligent digital education was 78 points on the principles of Marxist philosophy, while the AS of the traditional class was 52 points. Through the comparison of results, it was found that students' Marxist philosophy principles under intelligent digital education were better than those under traditional education, which proved that intelligent digital education was helpful for students to learn Marxist philosophy principles.

The AS of the final examination of the situation and policy of the five classes in the two universities was shown in Figure 6. Figure 6A represented the AS of the final exam of the class using intelligent digital education, and Figure 6B represented the AS of the final exam of the traditional education class.



Figure 6: Comparison of scores of situation and policy

From the data in Figures A and B, it could be seen that in the first group of performance comparison, the AS of the final examination of the situation and policy of the five classes using intelligent digital education was 70 points, and the AS of the five classes of traditional education was 60 points. In the second group of performance comparison, the AS of the final examination of the situation and policy of the five classes using intelligent digital education was 74 points, and the

AS of the five classes of traditional education was 54 points. In the third group of performance comparison, the AS of the final examination of the situation and policy of the five classes using intelligent digital education was 79 points, and the AS of the five classes of traditional education was 53 points. In the fourth group of performance comparison, the AS of the final examination of the situation and policy of the five classes using intelligent digital education was 82 points, and the AS of the five classes of traditional education was 59 points. In the fifth group, the AS of the final examination of the situation and policy of the five classes using intelligent digital education was 77 points, and the AS of the five classes of traditional education was 52 points. From the examination results, the school class situation and policy performance under intelligent digital education was better, which showed that intelligent digital education was better than traditional education in situation and policy teaching.

The AS of the final examination of ideological and moral cultivation and legal basis in five classes of the two universities was shown in Figure 7. Figure 7A represented the AS of the final examination of the ideological and moral cultivation and legal basis of the class using intelligent digital education, and Figure 7B represented the AS of the final examination of the ideological and moral cultivation and legal basis of the traditional education class.
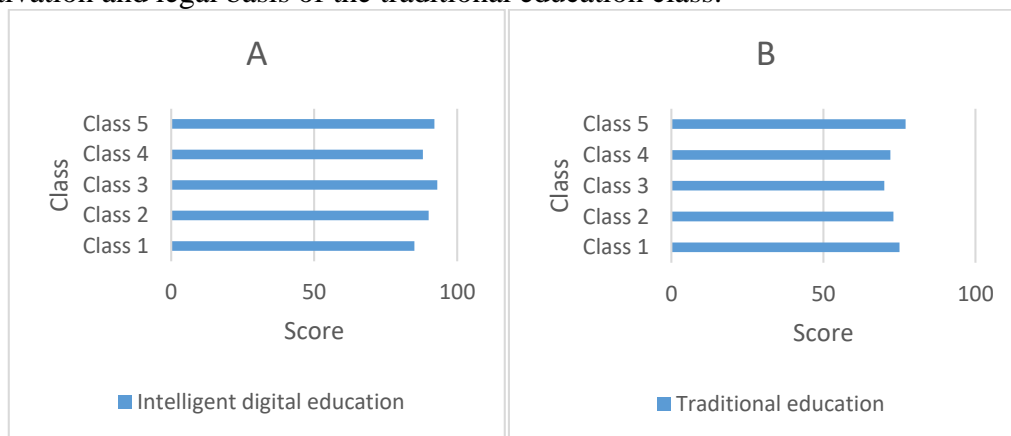


Figure 7: Comparison of scores of ideological and moral cultivation and legal basis

From the data in Figures A and B, it could be seen that in the first group of performance comparison, the AS of the final examination of ideological and moral cultivation and legal basis of the five classes using intelligent digital education was 85 points, and the AS of the five classes of traditional education was 75 points. In the second group of performance comparison, the AS of the final examination of ideological and moral cultivation and legal basis of the five classes using intelligent digital education was 90 points, and the AS of the five classes of traditional education was 73 points. In the third group of performance comparison, the AS of the final examination of ideological and moral cultivation and legal basis of the five classes using intelligent digital education was 93 points, and the AS of the five classes of traditional education was 70 points. In the fourth group of performance comparison, the AS of the final examination of ideological and moral cultivation and legal basis of the five classes using intelligent digital education was 88 points, and the AS of the five classes of traditional education was 72 points. In the fifth group of performance comparison, the AS of the final examination of ideological and moral cultivation and legal basis of the five classes using intelligent digital education was 92 points, and the AS of the five classes of traditional education was 77 points. From the results of the examination, the school class's ideological and moral cultivation and legal basis scores under intelligent digital education were better, which showed that intelligent digital education was better than traditional education in ideological and moral cultivation and legal basis teaching.

## 4. Conclusions

The IPE in universities is being paid more and more attention in today's era, while the IP level of students is in urgent need of improvement. This paper studied the improvement of the quality of IPE in universities. Through experiments, this paper collected the final exam scores of IP courses under intelligent digital education, such as Mao Zedong Thought and the theoretical system of socialism with Chinese characteristics, Marxist philosophy, situation and policy, ideological and moral cultivation and legal basis, and found that these scores were better than the exam scores of IP courses in traditional education, which confirmed that intelligent digital education really helped IPE. Due to the length of this paper, the collected performance data were not enough, and the discussion of IPE was not perfect. It would be improved in the future. It is hoped that the IPE in universities would be more and more successful, and the ideological and moral level of students would be higher and higher.

## Acknowledgement

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