Research Article

Effect Evaluation and Student Behavior Design Method of Moral Education in Colleges and Universities under the Environment of Deep Learning

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The traditional ideological and moral education evaluation mechanism in colleges and universities faces many challenges. Among them, the traditional ideological and political theory course evaluation mechanism is difficult to solve the contradiction between the teaching content of the ideological and political theory course and the ideological knowledge of the educated, and the test scores of the ideological and political theory course are difficult to measure the level of students’ ideological awareness that has become a prominent problem. The evaluation mechanism of ideological and political education in colleges and universities based on deep learning technology can play a role in the formative evaluation and consequential evaluation of courses, thus forming a new mechanism for evaluating ideological and political education in colleges and universities, and further improving the effectiveness of ideological and political education.

1. Introduction

In 2017, the Ministry of Education issued the “Ideological and Political Work Quality Improvement Project Implementation Outline in Colleges and Universities” [1]. The “Outline” proposed: “Improve the quality evaluation mechanism of ideological and political education in colleges and universities, and study and formulate the evaluation index system of ideological and political work in colleges and universities.” This marks the national optimization and innovation of the quality evaluation mechanism of ideological and political education work in colleges and universities has been brought to a new height. There are three main areas of quality assessment of ideological and political education work in colleges and universities: supply side assessment, demand-side assessment, and management assessment [2]. In general, “supply-side” and “demand-side” are economic concepts. In the quality evaluation system of ideological and political education work, supply side evaluation and demand-side evaluation refer to the evaluation of the educational content of educators and the evaluation of educated people, respectively. Assessment of learning outcomes. Under the new historical conditions, both educators and educated people have undergone profound changes, and the incompatibility of the traditional ideological and political education work quality evaluation system has become increasingly obvious [3]. Only by establishing new ideas and borrowing new technologies can we realize the optimization and innovation of the quality evaluation system of ideological and political education. In view of this, this paper is mainly based on deep learning technology, one of the core technologies of artificial intelligence, to provide optimization ideas for the evaluation system of ideological and political theory courses in colleges and universities.

The effectiveness of ideological and political theory courses has always been an important concern of ideological educators in colleges and universities because the effectiveness of courses is related to the quality of ideological and political theory courses [4]. In order to maximize the effectiveness of ideological and political theory courses, it is necessary to deal with the contradictions in the teaching of ideological and political theory courses. First of all, the...
content to be taught by educators in ideological and political theory courses and the ideological conditions of the educated are a pair of contradictions in the teaching work of ideological and political theory courses [5]. The content taught by ideological and political theory educators is the principles of Marxism and the theoretical achievements of the Sinicization of Marxism, which are scientific theories proved by practice; and the educated are college students, who grew up in a society with diverse values, and they themselves bring There is a diverse knowledge background, and their ideas and concepts are not yet stable, and it is easy to change [6, 7]. To adjust such a pair of contradictions, the designers of ideological and political theory courses must not only ensure the scientific and advanced nature of the content taught by educators but also maintain continuous evaluation of the learning effects of educated people's ideological and political theory courses to ensure Within a certain period of time, the content of the curriculum education will keep pace with the ideological level of the educated. Such “synchronization” requires advanced evaluation mechanisms to assist.

Second, the examination results of the educated ideological and political theory course and the actual behavior of the educated in real life are another pair of contradictions in the teaching work of the ideological and political theory course in colleges and universities. Nowadays, the assessment of ideological and political theory courses is mainly based on the final written examination. Educated students can still obtain high scores by memorizing knowledge points in such an assessment, but such high scores are not the main purpose of ideological and political theory courses. The main educational purpose of the ideological and political theory course is to enable the educated to make correct value judgments in real social practice through the teaching of Marxist theory. However, the fact that an educated person has achieved excellent results in the examination of the ideological and political theory course does not mean that he will also practice the advanced ideas advocated by the ideological and political theory course in social life. Students who achieve excellent grades in the assessment will not necessarily demonstrate the corresponding political and moral qualities in their actual behaviors, nor will they necessarily be able to convert the same excellent grades into positive and positive behaviors in long-term social activities [8, 9]. The key to improving the effectiveness of ideological and political theory courses is to ensure that the educated have achieved a certain ideological change and bring this ideological change into their daily life [10]. This requires educators to grasp the ideological transformation of the educated in the course of teaching ideological and political theory courses and to use the evaluation mechanism to complete the measurement of the level of ideological development. However, “the construction of the evaluation system of ideological and political education in colleges and universities is not perfect, and the evaluation methods and methods are relatively lagging behind.” The current traditional evaluation system of ideological and political education in colleges and universities cannot effectively solve the above contradictions [11].

Deep learning is a new technology in the field of artificial intelligence. This concept was proposed by British artificial intelligence expert Professor Hinton and others. It mainly refers to “using the multi-layer abstraction mechanism of the human brain to stimulate the learning process of the human brain through a neural network, so as to realize the abstract expression of a large amount of data in the real world.” What's more, “practice has proved that deep learning can capture the underlying essential features or rules within data such as natural images, videos, speech, and music with potentially complex structural rules” [12]. From this point of view, deep learning technology has a technical support function for ideological and political education theory courses. In practice, we can explore the innovation of ideological and political education evaluation according to the evaluation needs of ideological and political courses and the corresponding model of deep learning technology. This paper mainly selects the formative evaluation and the consequential evaluation of the ideological and political theory course as two evaluation methods for model construction.

2. Related Works

Intelligence refers to the ability of people to understand the objective world and use knowledge to solve practical problems. It is concentrated on the depth, accuracy, and completeness of reflecting objective things, as well as the speed and quality of applying knowledge to solve problems. Judgment, association, and creation are manifested. Turing, the “father of artificial intelligence,” once conducted an experiment called the Turing test to test whether a computer could not be detected when it communicated with people. Artificial intelligence expert Wisniewski believes that the intelligence of artificial intelligence is reflected in “machines have the ability to learn and understand things, deal with problems and make decisions.” Artificial intelligence is a computer program that imitates human intelligence. It relies on massive data and precise algorithms to achieve intelligent applications. For example, Microsoft’s machine Xiaoice, Google’s AlphaGo, can express its intelligence through image perception, semantic understanding, knowledge expression, and reasoning calculus.

Deep learning provides artificial intelligence with a smarter algorithm, and machines can learn by themselves by optimizing rules and models through data. The earliest research on artificial intelligence can be traced back to 1956, during which it experienced several slumps. An important reason is the lack of data and computing power. Deep learning was proposed by Hinton et al. in 2006, and more advanced algorithms that support artificial intelligence have subsequently emerged. Unlike humans, the second generation of artificial intelligence relies on logical analysis of the causal relationship between things to make decisions and judgments, and discover the correlation between things through deep learning supported by big data. The method it takes is not to analyze the sample survey data, but to analyze the whole data, so as to find the correlation between two or more groups of data [6]. For intelligent robots, the most
important thing is big data and intelligent algorithms. The more and more complete the data, the more accurate and less error-prone decision-making and judgment will be. The cognitive development of machines has made significant progress. For example, machines can look at millions of pictures a day and complete deep learning, while humans have strong intuition and reasoning abilities, and only need to browse and learn a few pictures to grasp the rules [10]. The combination of the machine’s deep learning and human reasoning ability is the symbiosis and integration of two types of intelligence, which is the future communion intelligence. The advantages of robots are reflected in speed, accuracy, load-bearing capacity, repetition consistency and operation time, etc., while human capabilities are reflected in thinking and logical reasoning, learning and skill progression, experience and real-time decision-making, interactive collaboration, safety, etc. The combination of the advantages of both humans and robots will exceed the capabilities of a pure human or robot [11]. For example, the expert system in distance education can use its own knowledge reserves to answer students’ questions, record, evaluate, and diagnose students’ daily learning situations, find problems and errors in students’ learning process, and realize individualized teaching. The spiral rise of the SOLO level reflects the development process of individual learning resulting from quantitative change to qualitative change and understanding level from shallow to deep. Pursuit coincides with deep learning. Therefore, from the perspective of the quality level and understanding level of learning, the SOLO taxonomy is related to shallow learning and deep learning. Figure 1 shows an illustration of machine learning and deep learning.

In the field of artificial intelligence, swarm intelligence originally originated from the research on the behavior of many social insect biological groups. Simple individuals, through mutual cooperation and cooperation, emerge such a feature of higher intelligent behavior, which is called swarm intelligence [12]. What is the intrinsic connection between swarm intelligence and artificial intelligence? Classical artificial intelligence represented by symbolic logic and expert systems is rule-driven deterministic intelligence, while artificial intelligence represented by neural networks and deep learning is data-driven uncertainty intelligence [4]. Swarm intelligence is an artificial intelligence composed of two interactive bits of intelligence. The intelligence of our social groups is also driven by interaction to form a joint force to achieve innovation and development. Swarm intelligence can gather human knowledge and wisdom in a wider range than any previous technology, and promote the development of human history.

Deep learning technology obscures the effectiveness of school moral education. On the one hand, technology has brought new measurement standards, which makes it more difficult to measure the effectiveness of moral education content. For example, the emergence of smartphones has changed the relationship between people and changed the individual’s perception of the world and self-awareness. McLuhan believes that “the impact of any medium (any extension of man) on individuals and society is due to new scales; any extension (or any new technology) of our to introduce a new scale into things” [13]. The new scale brought by artificial intelligence technology has become a new standard for measuring the effectiveness of moral education. Therefore, under the background of new technologies, student morality has new development characteristics and laws. However, if schools only emphasize the traditional moral education goals, they ignore the students in the actual technical environment, students will not be able to perceive the real situation of students moral growth, and will not be able to understand the real effectiveness of moral education, thus falling into a passive situation. On the other hand, the complexity of moral education content increases the difficulty of measuring the effectiveness of moral education. On the platform provided by artificial intelligence, students can obtain moral education resources that they care about, and discuss and exchange values with others. Artificial intelligence technology supplements the lack of time and space to teach moral education content in schools and makes up for the actual needs of students. However, in the context of artificial intelligence technology, whether the huge content of moral education is too broad, whether it is in line with the characteristics of children, and how effective is it? It is not easy to observe concretely.

3. Evaluation and Analysis of Moral Education Achievements under Deep Learning

This study defines the meaning of classroom teaching effectiveness as follows: The judgment of classroom teaching effectiveness is not only based on the actual development of students but more importantly, whether students’ development level meets the requirements of the curriculum objectives, that is, the achievement of curriculum objectives. Figure 2 shows the relationship between efficiency and benefit in teaching effectiveness.

This research mainly adopts the connotation definition of deep learning defined by scholar Zhang Hao, deep learning is "learners master unstructured deep knowledge and carry out critical higher-order thinking, active knowledge construction, effective transfer application and real problem solving, and then realize the development of higher-order abilities such as problem-solving ability, critical thinking, creative thinking, and meta-cognitive ability."

The definition of this meaning can be understood from the following two aspects: First, deep learning is an integral part of students’ learning process and a specific way of learning. Deep learning requires students not only to memorize and understand relevant knowledge but also to think critically about the knowledge they have learned and to actively construct and transform it, so as to finally transfer knowledge to real life and solve complex problems question. Second, focus on the development of higher-order abilities and thinking. Through deep learning, the development of higher-order abilities such as problem-solving ability, critical thinking, creative thinking, and meta-cognitive ability can be realized. These abilities can correspond to the four "application, analysis, synthesis, and evaluation" in Bloom’s educational goal taxonomy higher cognitive levels. It can be
seen that deep learning is oriented toward the acquisition of advanced cognitive skills and involves higher-order thinking activities.

3.1. Deep Learning Features. According to the learners’ understanding and mastery of knowledge, we can divide learning methods into deep learning and shallow learning. However, deep learning and shallow learning are not separated but interpenetrated. From the perspective of students’ learning process, deep learning starts from simple learning with low emotional and behavioral input and gradually turns to advanced learning with high emotional and behavioral input. Therefore, when many scholars in the domestic academic circle express the characteristics of deep learning, they often compare them with shallow learning in the statement and then draw the characteristics of deep learning. For example, Professor Li Jiahou compared the characteristics of deep learning and shallow learning and concluded that the characteristics of deep learning are manifested in three aspects: “understanding and criticism, connection and construction, migration and application.” The author uses Li Jiahou’s comparative framework for deep learning characteristics. Based on the deep learning characteristics supplemented by other researchers, we select the memory methods, cognitive results, learning motivation, learning behavior, learning effectiveness, reflective state, thinking ability, and cognition of learners in deep learning and shallow learning. Differences in skills, etc., are compared in more detail.

Through the comparison in Table 1, deep learning emphasizes comprehension memory in terms of memory methods and focuses on the construction and transformation of knowledge in terms of cognitive results. In terms of learning behavior, it is a mixed behavior with high emotion and high behavioral investment. Conduct critical thinking and self-reflection in behavior, focus on transferring the knowledge to memorization life in cognitive skills, show learning as a strong endogenous motivation in learning motivation, and emphasize high effect in learning effect, high efficiency, and high level, focusing on the advanced thinking level in the thinking level, and highlighting the student learning as the center in teaching.

3.2. The Understanding and Transformation of Knowledge Must Go through Deep Learning. In the course of ideological and political theory courses in colleges and universities, college students should first memorize the concepts and knowledge of the basic viewpoints of socialism with Chinese characteristics [13–15]; the second is the consolidation and transformation of knowledge. When college students complete the memorization of this viewpoint of socialism with Chinese characteristics, they will assimilate or adapt this knowledge to clearly repeat the knowledge they have learned; again, it is the transfer and application of knowledge. When asked about the content of basic viewpoint of socialism with Chinese characteristics, college students can quickly retrieve the relevant knowledge to answer. To sum up, through the above three stages, the students’ knowledge learning process of the basic viewpoints of socialism with Chinese characteristics is explained. This learning process focuses on understanding and transformation to help students better learn relevant knowledge [16]. Understanding and transformation are high-level cognitive processing and one of the main features of deep learning. Therefore, it can be
said that the understanding and transformation of relevant knowledge must go through deep learning. Figure 3 shows generalized knowledge learning stage and classification model.

3.3. The Acquisition of Abilities and Skills Must Go through Deep Learning. In the cognitive stage, first of all, by observing the actions of others using Marxist theory to analyze and solve practical problems, to stimulate situational awareness to form an internal action image as a reference for actual analysis and problem-solving; second, when forming After the image, students combine their own abilities and experience to form operational level expectations, that is, they have self-awareness of whether they can skillfully use Marxist viewpoints to analyze and solve problems. In the connection stage, when students face complex problems, they will know how to use the worldview of Marxist theory to analyze the problem, and at the same time, they will use the Marxist methodology to solve the problem. In turn, the connections that students form in problem-solving become a new round of stimulation.

To sum up, the above three stages explain the acquisition process of students’ ability to analyze and solve problems by using the Marxist world outlook and methodology, which is essentially the process of internalizing knowledge into ability. This process focuses on the transfer and application of knowledge, emphasizing the application of the learned knowledge to real life. And this process is one of the main characteristics of deep learning, so it can be said that the acquisition of students’ abilities and skills must be carried out by deep learning.

3.4. The Formation of “Three Views” Must Go through Deep Learning

First, know “choices”—make the right choices when faced with situations that conflict with existing values. Various values and cultural ideologies in modern society collide, exclude, and merge with each other, which leads to college students often entering a choice situation premised on moral conflict, and the choice situation is opposite and incompatible. How to make the right choice is a difficult challenge for college students. Therefore, it is required to teach students to make choices, and to do so when making choices: first, know how to make free choices according to their own values; second, when faced with multiple choices, know how to weigh the pros and cons of these choices; Choose consequences for analysis and thinking in order to make correct and sensible choices [17].

Second, learn to “value”—value your choices and feel content. Many college students have different performances from their predecessors, on and off-campus. From a psychological point of view, this is essential because college students are unwilling to be responsible for behaviors that are not of their own will and without emotional intervention. According to Ruths, he believes that “value comes from the choices we are willing to make,” in other words, only on the basis of careful thinking and cherish the results of their choices, college students will be responsible for their choices with words and deeds. Therefore, at this stage, students are required to: first, learn to be satisfied with the choice they have made, and affirm their choice with sufficient reasons; second, be willing to publicly admit this choice. Finally, put into action, act on that choice, and repeat it as a way of life. College students make rational choices and cherish them when faced with choices, but these cannot make college students form correct values. Laths believes that in order for students to establish a true value system, “the cherished choice must be put into action, so that the action reflects the chosen value orientation.” Based on this, at this stage, students are required to: first, put the cherished choices into actions, so that the actions reflect the correct value orientation; a way of life [18]. To sum up, Laths believes that through choice, cherishing, and action, students’ value issues have been evaluated and clarified, resulting in correct values. Although the value clarification theory is a Western value education theory, because values are universal in human society, the education methods of values also have certain commonalities, which are the “three views” for middle school students in the ideological and political theory courses in our country’s colleges and universities. The formation provides realistic operability.

### Table 1: Comparison of deep learning and shallow learning features.

|                  | Deep learning                                      | Shallow learning                                   |
|------------------|----------------------------------------------------|----------------------------------------------------|
| Memory           | Memorizing on the basis of understanding           | Rote memorization                                  |
| Cognitive results| Build exercises between knowledge and make conceptual changes | Learning scattered or isolated                      |
| Learning behavior| Complex activities with high emotional and behavioral input | Simple activities with low emotional and behavioral input |
| Reflect on state | Critical thinking, self-reflection                 | Lack of critical thinking and self-reflection       |
| Cognitive skills | Transfer what you learn to your life               | Unable to use knowledge flexibly                   |
| Thinking level   | Higher level of thinking                           | Lower levels of thinking                           |
| Learning motivation| Internal understanding drives learning             | Learning driven by external pressure               |
| Learning effect  | High effect, high efficiency and high-level        | Low effect, low efficiency, low level              |
| Teaching methods | Focus on student learning                          | Take the teacher’s teaching as the center          |
4. Survey Design and Implementation

4.1. Investigation Plan Design. Investigating the status quo of the effectiveness of classroom teaching of ideological and political theory courses in colleges and universities is convenient for analyzing the difference between the actual state and the state of classroom teaching of ideological and political theory courses in colleges and universities from the perspective of deep learning, which is the real basis for follow-up countermeasures [19]. In other words, we need to understand the subject and object of the ideological and political theory of classroom teaching behavior in colleges and universities, that is, the teaching and learning behavior of teachers and students, and analyze whether their behavior can contribute to the effectiveness of ideological and political theory classroom teaching. From the perspective of deep learning, we believe that the mark of teachers and students achieving the effectiveness of classroom teaching in ideological and political theory courses is that students have the characteristics of deep learning in the learning behavior of ideological and political theory courses and that teachers can inspire students’ deep learning behaviors [20].

Therefore, this study conducted a sample questionnaire survey on teachers and college students of ideological and political theory courses in colleges and universities. To investigate the current situation of classroom teaching in ideological and political theory courses in colleges and universities for teachers of ideological and political theory courses, we mainly understand the occurrence of teaching behaviors that stimulate students’ deep learning in the teaching process. The teachers of ideological and political theory courses in colleges and universities are mainly composed of full-time teachers and ideological and political counselors, so the questionnaire survey objects for teachers are also taken from these two groups [21]. In addition, a survey of the current situation of ideological and political theory courses in colleges and universities was conducted for the students from freshman to senior year, in order to understand the in-depth study of students’ ideological and political theory courses. The questionnaire is conducted at the end of the school year, so even the first-year students have already taken part in the ideological and political theory course, which meets the needs of the sample.

Regarding the analysis of survey data, the descriptive statistics function of SPSS software is used to analyze the teaching behavior of college teachers in ideological and political theory courses and the deep learning behavior of students, and use independent sample T-test and one-way analysis of variance to understand the group differences of the above behaviors. Table 2 shows a list of the content design of student questionnaires.

After statistics, a total of 135 questionnaires were distributed for teachers, 135 were recovered, 134 were valid, the recovery rate was 100%, and the effective rate was 99.3%; a total of 1,300 questionnaires were distributed for students, 1,254 were recovered, 1,221 were valid, and the recovery rate was 96.5%, the effective rate is 93.9%. The basic information of the samples of the teacher questionnaire and the student questionnaire are shown in Tables 3 and 4, respectively.

Through investigation and analysis, it is found that the learning behavior of college students in ideological and political theory courses basically does not have the characteristics of deep learning behavior. It is mainly manifested in the lack of interest in learning ideological and political theory courses, the basic lack of high-level information
processing in the course of ideological and political theory courses, and the lack of comprehensive application of knowledge [22]. See Figure 4 for a horizontal comparison of the mean values of each survey content.

There are also some group differences in the above situation. Whether it is the learning drive of ideological and political theory courses or the level of information processing, girls are worse than boys, and science and engineering students are worse than liberal arts students. From the analysis of the differences in different grades, the first-year students' ideological and political theory courses are slightly better than those of other grades.

By analyzing the current situation of classroom teaching of ideological and political theory courses in colleges and universities, it is found that the classroom teaching behaviors of ideological and political theory teachers are not ideal enough to stimulate students' deep learning [23]. When designing curriculum objectives, teachers do not fully realize the important role they should play in the realization of advanced curriculum objectives; although teachers have adopted some teaching methods to promote deep learning, the effect is not good; the teacher-student relationship cannot promote information teachers cannot fully and accurately understand the difficulties encountered by students in the learning process of ideological and political theory courses, and it is difficult for students to understand the purpose of teachers to encourage them to conduct classroom discussions; lack of understanding, it is difficult for the course examination to give feedback on the real situation of students' deep learning; the classroom teaching atmosphere of ideological and political theory is not ideal. See Figure 5 for a horizontal comparison of the mean values of each survey content.

Depth learning is the purpose of ideological and political classroom teaching in the new era that emphasizes autonomy, inquiry, and cooperative learning. In order to guide students to learn independently, teachers should change their role as knowledge imparters, and at the same time be a learning theme designers and learning process guidance.

| Table 2: List of content design of student questionnaires. |
| Research topic | Survey content | Observation point | Question id |
|-----------------|----------------|------------------|-------------|
| Overall learning | Students' judgment of their overall learning status | Self-judgment of students' overall learning status and academic performance | Q1, Q2 |
| Learn drive | Students' judgment of their own motivation and strength in ideological and political theory courses | Whether the students have the desire to learn the ideological and political theory course and study interest | Q3, Q4, Q5, Q6, Q7 |
| High-level information processing | Students' judgment of their own high-level knowledge processing in the course of ideological and political theory learning | Whether students have the learning characteristics of high-level information processing in the learning process of ideological and political theory courses, and whether teachers have the elements to urge students' deep learning behavior in the course homework arrangement and course examination implementation from the perspective of students | Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15, Q16 |
| Comprehensive application of knowledge | Students' judgment on their comprehensive use of ideological and political theory courses | The situation of college students' comprehensive use of knowledge in ideological and political theory class teaching and the situation of teachers guiding students to use comprehensive knowledge | Q17, Q18, Q19, Q20, Q21, Q22 |

| Table 3: The basic situation of the questionnaire survey sample of the current situation of classroom teaching of ideological and political theory courses in colleges and universities. |
| Teacher group | Seniority | Master course |
|----------------|-----------|---------------|
| Full-time teachers | Counsellor | Less than 1 year | 1-3 years | 4-6 years | 7-25 years | 26-33 years | Think repair | Outline | Netherlands | Wool | Policies |
| Frequency (person) | 70 | 64 | 23 | 42 | 33 | 30 | 6 | 70 | 24 | 17 | 19 | 4 |
| Proportion (%) | 52.2 | 47.8 | 17.2 | 31.3 | 24.6 | 22.4 | 4.5 | 52.2 | 17.9 | 12.7 | 14.2 | 3.0 |
5. Conclusion

On the basis of analyzing and summarizing the characteristics of deep learning, combined with the current problems in the teaching process of moral education in colleges and universities, this paper proposes a teaching strategy for high school ideological and political classrooms from the perspective of deep learning [24]. In the teaching process of high school ideological and political courses from the perspective of deep learning, under the guidance of teachers, students not only deepen their understanding, grasp, construct, create, transfer and apply the knowledge they have learned through reflection on the process and results of their own learning activities, but also achieve the knowledge goal of deep learning; it also promotes the development and improvement of related skills, transfers application and problem solving, and achieves the skill goal of deep learning [25].

Data Availability

The dataset can be accessed upon request.
Conflicts of Interest
The authors declare that they have no conflicts of interest.

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