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Retraction

Retracted: Teaching Design of Online Ideological and Political Course Based on Deep Learning Model Evaluation

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] L. Qiao, "Teaching Design of Online Ideological and Political Course Based on Deep Learning Model Evaluation," *Scientific Programming*, vol. 2022, Article ID 4754972, 8 pages, 2022.

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Research Article

Teaching Design of Online Ideological and Political Course Based on Deep Learning Model Evaluation

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In practical terms, teachers are supported to use more straightforward teaching methods, such as creating real-life contextual problems, to help students develop deep learning skills. In this paper, using Bayesian theory and Bayesian classifier research methods, a machine learning model was constructed using Python to establish the correspondence between online teaching of civics and high-level semantic features and to achieve computer learning through text and teaching design evaluation research that can identify high-frequency knowledge points. The inter-relationship model knowledge mapping, the accuracy is 90%, and the continuous knowledge update help to improve the model accuracy.

1. Introduction

In order to implement the fundamental task of "establishing moral education," teachers should actively try to change their teaching ideas, improve their existing teaching methods, and change the teaching process from one centered on the transfer of knowledge to one centered on the development of the whole student [1]. To this end, teachers should pay attention to guiding students to carry out independent, cooperative, and inquiry learning, give full play to the main role of students in the learning process, encourage students to discover and ask questions, solve problems in the creation of problem situations, change students' learning style, and promote students' deep learning [2].

Facing a series of challenges brought by the rapid change of knowledge content and the increasingly fierce international competition for highly qualified talents, it is an important and urgent issue for students to change their learning style and improve the quality of learning. In order to become qualified citizens in the 21st century, students must not only have a deep grasp of the subject matter but also learn to learn and have better problem solving, higher-order thinking, independent thinking, and knowledge application skills [3]. Therefore, in order to meet this requirement of social development, teachers of ideology and politics classes must change their teaching methods in the teaching process, give full play to the main position of students in the learning process, provoke students to think and research deeply about the knowledge and content they have learned, and promote students' deep learning [4]. The problem solving based on real situations is towards deep learning practice exploration, which is inseparable from the high-quality classroom teaching problem design of ideology and politics class teachers. It can be said that good problems are favorable pushers to promote students' deep learning and play an important role.

This paper conducts a study on the design of teaching problems in high school ideology and politics based on deep learning, combining the cutting-edge concepts of deep learning and problem design in international and Chinese development and closely integrating them with educational teaching practice to explore specific strategies for teaching problems in ideology and politics based on deep learning, which can enrich the research related to deep learning and problem design in ideology and politics and play a role in the development of learning and teaching design theory in ideology and politics [5, 6].

This paper combines the author's educational internship experience to explore specific and feasible strategies for the

design of teaching questions based on deep learning in ideology and politics classes, so as to provide inspiration for ideology and politics teachers to change their existing teaching philosophy, improve their teaching methods, cultivate students' higher-order thinking, and promote students' deep learning. At the same time, it also provides a concrete reference for teachers to use high-quality questions to help students' deep learning in the actual teaching process, which can provide an example to follow in the cultivation of high school students' higher-order thinking ability and improve the teaching effect of ideology and politics class, cultivate the core literacy of ideology and politics subject, and better achieve the curriculum objectives [7].

In practical terms, teachers are supported to use more straightforward teaching methods, such as creating real-life contextual problems, to help students develop deep learning skills. In this paper, using Bayesian theory and Bayesian classifier research methods, a machine learning model was constructed using Python to establish the correspondence between online teaching of curriculum thinking and high-level semantic features and to achieve the ability of computers to identify high-frequency knowledge points through text learning and instructional design evaluation research [8]. Based on the above analysis, this paper focuses on the design and application of questions in the teaching of ideology and politics to promote students' deep learning, with the title of "Research on the Design of Teaching Questions in High School Ideology and Politics Based on Deep Learning."

2. Related Studies

Deep learning is a hot topic of common interest in technology and education, but the specific areas of research are very different. Deep learning in the technology field is specifically about machines and is technical research on machine learning, and the research results are applicable to text and sound recognition, certain specialized competitions, etc. Deep learning in the education field is a learning approach aiming at improving students' creative thinking, problem solving, and other higher-order abilities, with the aim of transforming students' learning styles to improve their learning quality. The deep learning described in this paper refers to the latter.

2.1. Research Status. In the 1960s, Soviet scholars Makhmutov and Machuskin proposed the problem-based teaching method, and more and more people have focused on the problem-centered view of teaching and learning and explored it in detail. Since the 1990s, multimedia teaching has become more and more popular in the classroom, and more and more people agree with the problem-based approach and consider problem solving as an important part of the teaching process [9]. The American scientist Schwab believes that teachers must give full play to the main position of students' learning and guide them to acquire knowledge through independent thinking [10].

In CNKI, a time span of 2005–2019 was searched, and 7177 results were found with the theme of "deep learning," including 266 articles related to the theme of "core literacy," 223 articles related to the theme of "learners," 183 articles related to the theme of "shallow learning," and 150 articles related to the theme of "flipped classroom." The topic of "teaching ideology and politics" with "deep learning" found 1 result [11].

In the article [12], the authors proposed that deep learning refers to learning in which learners can critically learn new knowledge and new ideas based on understanding the content of knowledge.

It can be seen that deep learning focuses on whether students can critique, reflect on, and transfer what they have learned, and whether they can flexibly apply what they have learned in practical problem solving. Kang et al. [13] clarified the characteristics of deep learning in the article "Exploring the Connotation and Cognitive Theoretical Basis of Deep Learning" and proposed that the basic point of deep learning is higher-order thinking and also proposed that an important aspect of promoting students' deep learning is to cultivate students' higher-order thinking ability and suggested that constructivist theory, contextual cognitive theory, distributed cognitive theory, and metacognitive theory have profound theoretical guidance implications [14].

Meanwhile, many scholars distinguish deep learning from shallow learning in different ways. Jue Wang's "Dewey's Educational Thought and Deep Learning" and Xiaoyun Ye's "On Shallow Learning and Deep Learning" compare deep learning and shallow learning as two different learning styles, indicating that deep learning and shallow learning are not separated from each other, but complement each other without one another, deepening the understanding of deep learning [15].

The researchers [16] distinguish deep learning from shallow learning in terms of learning style and driving orientation. Similarly, the methodology proposed in [17] analyze the current deep learning research situation with the focus on the analysis framework model of e-learning constructed by them and put forward some problems in the current research according to the actual situation, which provides a direction for the future research on deep learning. At present, because of the late start of deep learning research in China, the research on the basic theory of deep learning is still lacking, and the research on the basic theory of deep learning only explores the connotation and lacks deeper investigation of deep learning from the perspective of specific education teaching and learning methods [7].

In the article "Deep Learning Concept of Thinking and Teaching in Ideology and Politics Class—an Analysis Based on High School Politics Teaching Clips," Hidayat et al. [18] use teachers' teaching clips to explore teaching strategies to promote students' deep learning and cultivate students' critical thinking. In the article "Optimizing Contextual Questions to Drive Deep Learning," Hao [19] addresses the current situation of superficial learning in the classroom teaching of high school ideology and politics and explores ways to promote students' deep learning from the perspective of cultivating students' core literacy in ideology and

politics, proposing that the teaching design should focus on students' future development, relate to the actual life of students, take actual problem situations as the carrier, and design teaching questions related to the teaching content to guide students' future development [5]. We propose that the teaching design should focus on the future development of students, relate to the actual life of students, use the actual problem situation as a carrier, design teaching problems related to the teaching content to guide students' thinking progression, and promote students' deep learning, so as to cultivate students' core literacy in ideology and politics to promote students' deep learning [20].

In the political theory course, political education model is based on the recommendation system of students' preferences and includes three machine learning models. This platform of ideological and political education in colleges and universities is based on the machine learning and deep learning algorithms [21]. Similarly, under the premise of active in the field of machine learning, online teaching system of ideological and political education has been studied using machine learning and deep system in order to specifically understand the current situation of the construction and application of machine teaching systems on the basis of supervised teaching of ideological and political theory courses in local colleges and universities [22].

To sum up, deep learning has received wide attention in the field of education, and the related literature is increasing year by year. In general, the research on deep learning in our country mainly focuses on the theoretical connotation of deep learning, the definition of its characteristics, and the study of strategies to promote students' deep learning, but there are not many studies related to the combination with the teaching of specific subjects, especially with the teaching of high school ideology and politics. Most of the literatures are on the importance of deep learning to the teaching of political science classes and how to promote 'students' deep learning from the aspects of interest, 'teachers' teaching philosophy, and the change of teaching methods, and most of it involves the importance of "problems" to promote 'students' deep learning, but there is almost no literature on how to propose countermeasures for 'teachers' problem design based on deep learning [13]. This makes the writing of this paper more difficult.

3. Naive Bayesian Classifier

Naive Bayes classifier (NBC) is a classification method which is based on the assumption of feature independence, assuming that the input features have no influence on the attributes of the class to which they belong and other features do not influence each other [12]. For text classification, it is assumed that words are independent from each other, and the principle of its working is shown in Figure 1.

Figure 1 specifies the parent node of all feature nodes, and there is no correlation amongst the features. The problem of classifying knowledge texts of material-based textbooks can be converted into a machine learning classification problem [23]. From the Bayesian formula, $P(C_i|A)$ is the posterior probability of class C_i,

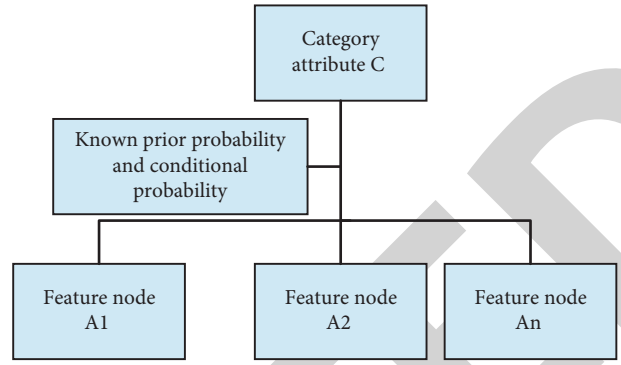

Figure 1: Structure of plain Bayesian classifier.

$$P(C_i|A) = \frac{P(A|C_i)P(C_i)}{P(A)}. \tag{1}$$

In equation (1), all $P(C_i|A)$, $P(A|C_i)$, and $P(C_i)$ need to be calculated. A knowledge point belongs to category C_i without knowing its characteristics, and the value of C_i is equal to the number of samples in category C_i divided by the total number of samples in the training set n. The conditional probability that a feature A belongs to category C_i is $P(A|C_i)$. Generally, to simplify the computation, it is assumed that each feature of feature space A is independent of each other, and although there will be some information missing, the computational performance is greatly improved [13]. The simplification leads to the following equation:

$$\begin{aligned} P(A|C_i) &= P((A_1, A_2, \ldots, A_m)|C_i) \\ &= \prod_{j=1}^{m} P(A_j|C_i). \end{aligned} \tag{2}$$

In the whole calculation process, the training set:test set = 4 : 1, and the prior probability $P(C_i)$ is expressed by the following equation:

$$P(C_i|A) = P(C_i) \prod_{1 \le j \le n} P(A_i|C_i). \tag{3}$$

4. Curriculum Civics Online Instructional Design

The core content of semantic recognition is to realize the process of Chinese information classification by plain Bayes, which mainly includes two phases: training phase and classification phase [24], as shown in Figure 2.

In the proposed classification framework, depicted in Figure 2, two phases are used. In the first phase, training of the text processing takes place which includes data preprocessing, features extraction, and classifier construction. In the second phase, the classification or prediction task is performed for the unseen data or text and evaluating the constructed classifier.

4.1. Text Preprocessing. Text preprocessing is the most important step in the process of classifying material-based textbooks, and the main processes include the removal of

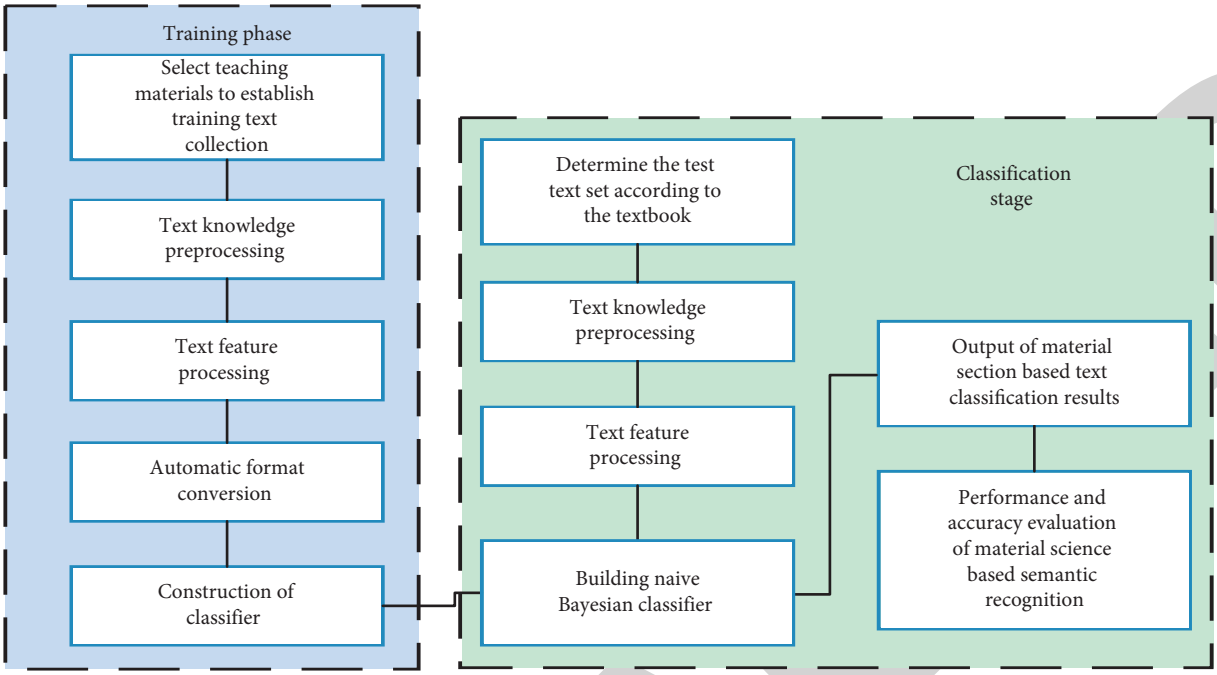

Figure 2: Classification structure framework.

deactivated words, the elimination of repetitive words, and word separation. The text is preprocessed and then characterized and formatted to extract the keywords that characterize the text content from the text using the word separation technique. The development tool of this paper uses the Python-based Jieba word splitting tool, which uses "exact mode" processing to complete the word splitting step. Since the large number of keywords generated in the word separation process not only occupy storage space but also affect the accuracy of the model, the feature set is transformed into a feature vector through feature processing, which can effectively represent the features of each category of text [25].

The text content of each category is saved as a txt file and then classified into 11 categories (Fundamentals of Crystallography, Solidification, Crystal Structure, Recrystallization and Solid State Transformation, Alloy Phase Structure, Phase Diagram and Phase Transformation, Atomic Diffusion of Crystal Defects, Interfaces, and Deformation of Materials), and the corresponding textbook is placed in the corresponding folder (e.g., the CKJ001 folder contains all documents related to the Fundamentals of Crystallography). The text is then read into the completed model via Python and the word separation process is started. After preprocessing, keywords of all categories can be obtained from the text of the material-based textbook, and then all keywords are composed into a collection of text feature items representing all knowledge points of the textbook [16].

4.2. Feature Processing. The Boolean model is used to represent each knowledge point text according to the position order of the feature words in the feature word lexicon. The frequency of the keywords of the knowledge point is 1 (0 means not appeared; 1 means appeared), and if the word has appeared in the material-based textbook, it is counted as 1. Finally, a vector matrix representing the text of each knowledge point is formed, as shown in Figure 3. The normalized vector matrix can be directly processed by the classifier as input.

4.3. Classifier Classification. The key parameters of the plain Bayesian classifier can be trained to obtain the prior probability and conditional probability by feature labeling the text in the training set according to the feature map of the full-text knowledge points of the corresponding frequency word textbook [17]; the obtained training model can be used to test the classification of the material-based knowledge. The text to be classified can be imported into the trained model to obtain the corresponding predicted categories, and the accuracy of the model can be obtained by comparing the analysis with the real categories.

The plain Bayesian classifier is mainly used to calculate the prior probability P(C) that a specific knowledge point belongs to category C and the conditional probability P(A|C) that feature word A belongs to category C after importing the training set data into the model to complete the training. In the modeling training process, we can see that a feature word A does not appear in category C in the training set, which makes the probability of the text content appearing in the knowledge point 0, which is not consistent with the actual situation of the textbook, therefore the smoothing process is performed.

$$P(C) = \frac{N_C + 1}{N + n}. \tag{4}$$

0,1,1,0,1,1,1,1,1,1,1,1,0,1,1,1,1,0,0,0,1,0,0,1,1,0,1,1,1,0
1,1,1,1,1,1,1,0,1,1,1,1,0,1,1,0,1,0,0,0,1,1,1,0,0,1,0,1,0,1
1,0,1,1,1,1,1,1,0,0,0,0,1,1,1,0,1,0,1,1,1,0,1,1,1,0,0,0,0,0
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1,0,1,0,1,0,1,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1
0,0,0,0,1,0,1,0,1,0,1,0,1,0,0,0,0,0,0,1,0,1,0,1,0,1,0,1,0,1
1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,1,1,1,1,1

Figure 3: Text vector representation.

4.4. Course Civics Online Teaching. Each part of the data set is extracted separately, where the training set:test set = 4 : 1. The specific steps are shown in Figure 4. The accuracy rate is the ratio of the number of correctly classified knowledge points to the total number of imported samples, i.e., the accuracy rate = number of correctly classified samples/total number of samples.

5. Experimental Analyses

In this section, constructivist and contextual cognitive learning theories are explained.

5.1. Constructivist Theory. Constructivist theory is an important theoretical guide for the study of deep learning. The constructivist view of learning believes that learning is not simply the transmission of teaching contents from teachers to students, but should be the process of students' independent construction and transformation of knowledge on the basis of understanding the learning contents and that students are not passive recipients of knowledge, but learning subjects who can construct meaning [7]. This view is different from the traditional passive learning theory, which attaches importance to students' subjectivity and advocates that learning is a process of active and creative learning and construction of knowledge by students. The constructivist view of teaching and learning believes that teaching should help students create a good learning environment, enhance cooperation among students, develop their analytical and reasoning thinking activities, help students to actively construct meaning on their own, and help promote their deep learning, the effects of which are shown in Figure 5.

Therefore, teachers' classroom problems should focus on linking students' relevant knowledge and experience to help promote the growth of students' knowledge and experience and derive "new knowledge" from "old knowledge" to achieve the growth of students' knowledge and experience [18]. At the same time, teachers should focus on creating appropriate problem situations to stimulate students' higher-order thinking activities such as reasoning and analysis and to promote students' deep learning.

5.2. Contextual Cognitive Learning Theory. Contextual cognitive learning theory emphasizes that the learning of knowledge cannot be separated from the social context and that the knowledge acquired by students is inseparable from social activities and thinking movements and that knowledge is embedded in the behavior of students in using knowledge to solve problems to expand and develop [19]. It emphasizes that students cannot learn knowledge without a certain external environment, and at the same time, knowledge is the level at which learners integrate a series of behaviors to adapt to the changing and developing external environment to solve problems in different contexts, focusing on improving students' ability to use knowledge to deal with real problems.

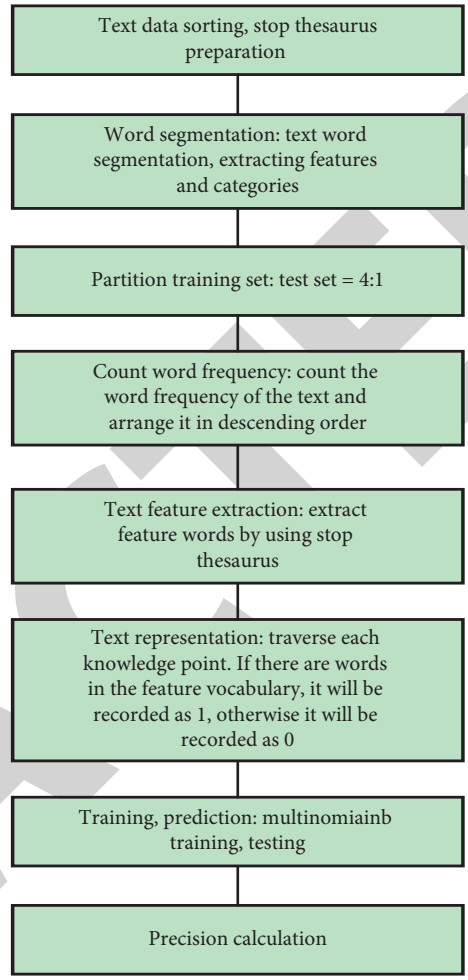

Figure 4: Text processing analysis flow.

As shown in Figure 6, the y-axis is the number of students in the quantity and the x-axis is the ability of contextual cognitive learning. Therefore, teachers should create appropriate contexts for the problems presented in the classroom so that students can acquire new knowledge from the context, in problem solving, and at the same time be able to use what they have learned to solve new contextual problems, combine social activities, thinking movement, and contextual depth, promote effective knowledge transfer, develop students' ability to apply knowledge, foster higher-order thinking, and promote deep learning.

5.3. Training Result. The teacher can tell the advanced needs of excellent tour guides when explaining the content of the teaching materials. The teachers can enhance the students'

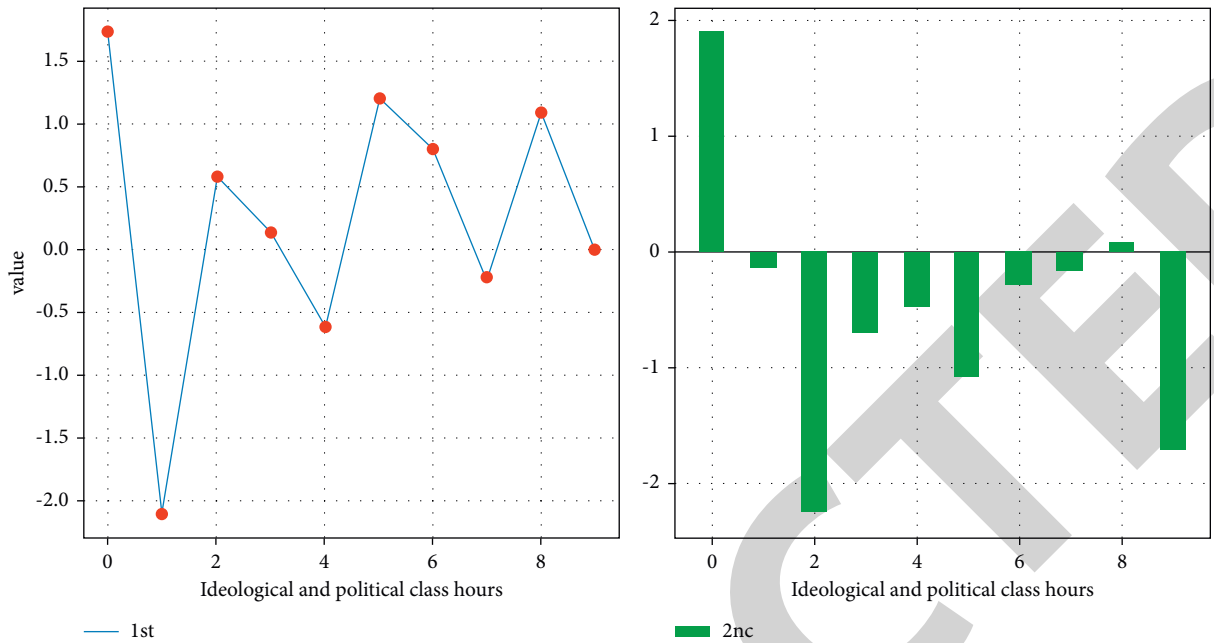

Figure 5: Evaluation of civics class hours.

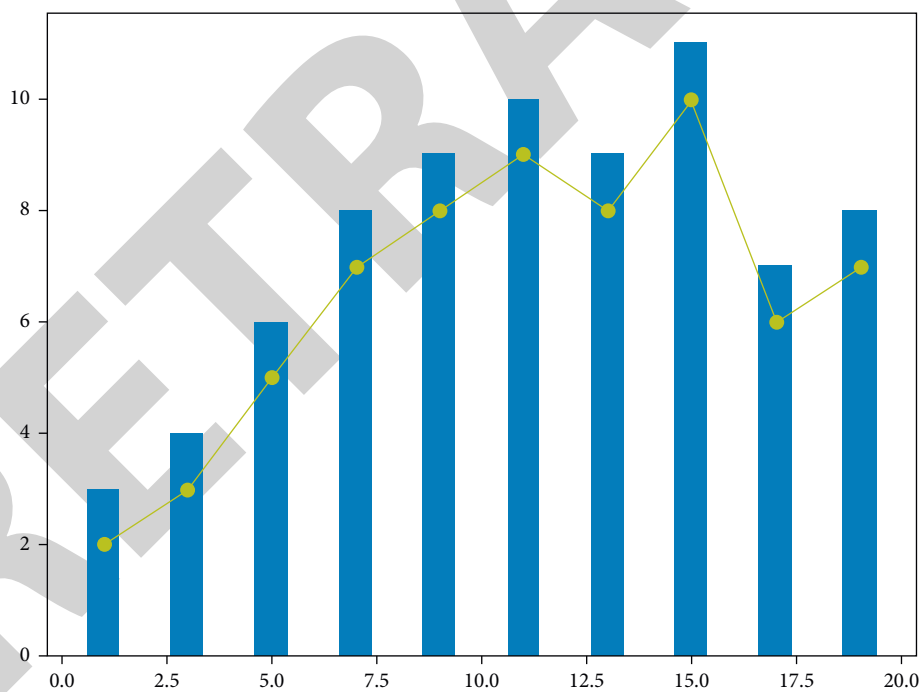

Figure 6: Ability to learn cognitively in different contexts.

understanding of the principles of tour guide service and guide them to pay attention to the quality-of-service sincerity by telling the advanced deeds of the excellent tour guides and the cases of how the tour guides are tourist-oriented and how to serve the tourists sincerely, as shown in Figure 7.

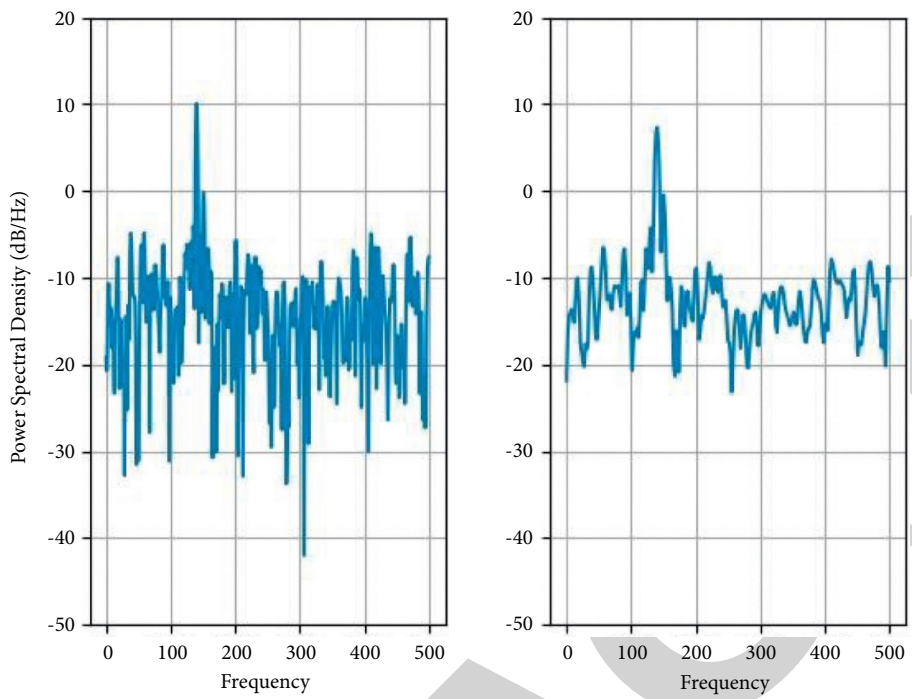

Figure 7: Training test results.

6. Conclusions

A machine learning model of the basic course contents of the online teaching of civics was built using Python programing language. Through text training and validation, the model can learn the professional knowledge from the textbook and can give the frequency of relevant knowledge points and inter-related information. Accuracy of the model reaches more than 90%. The model can be used to assist in the classroom teaching of the basic course of civics and political science online teaching and improve the efficiency and effectiveness of knowledge learning.

In practical terms, teachers are supported to use more straightforward teaching methods, such as creating real-life contextual problems to help students develop deep learning skills. In this paper, Bayesian theory and Bayesian classifier research methods have been used with the help of Python language. This way, a correspondence is established between online teaching of civics and high-level semantic features.

Data Availability

The data sets used during the current study are available from the author on reasonable request.

Conflicts of Interest

The author declares that he has no conflicts of interest.

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