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New Thoughts on the Construction of the Curriculum System of Civic and Political Education for College Students in the Information Age

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Abstract With the rapid development of information technology, the curriculum system of college students' Civic and Political Science course has encountered brand-new opportunities and challenges. This paper proposes an innovative path for the construction of the course system of the Civic and Political Science course, and further proposes a technical framework based on the college course recommendation model and online teaching system on this basis. In the college course recommendation model, a learner portrait is constructed, and a course recommendation method based on the similarity of course portrait and DBN model is proposed. In the online teaching system, the system design is carried out from the two modules of teaching resources and teaching, and the learning effect evaluation method based on DKVMN-FGC model is proposed. In the innovative practice of the Civics and Political Science course, students majoring in Chinese language at University Z are taken as the experimental subjects, and experimental classes and control classes are set up. The experimental class outperformed the control class after the practice, showing a significant difference ($P<0.05$). The mean values of all aspects in the Civics Teaching Satisfaction Survey are more than 3 and close to 4, and the students are more favorable to the Civics teaching during the practice period. In the evaluation of the effectiveness of Civics teaching, except for the Civics culture, the scores of all primary and secondary indexes are higher than 0.9, and the grades are all evaluated as "good".

Index Terms DBN model, Civics class, DKVMN-FGC, learning effect evaluation

I. Introduction

With the development of national education informatization and the promotion of the "Internet +" strategy, the development of information technology has triggered changes in education, giving rise to new educational concepts and teaching models [1], [2]. The research on the integration of new information technology and ideological and political theory courses in colleges and universities fits the needs of the development of the times and the realistic demands of education and teaching [3]. The teaching reform of ideological and political theory courses in colleges and universities under the background of information technology is faced with new opportunities in teaching resources, teaching interactions, teaching discourse, etc. and new challenges in knowledge acquisition, public opinion dissemination, value impact, etc., which makes the reform and development of ideological and political course teaching appear a brand-new way of thinking and insight perspectives [4]–[6]. The new mode of "teaching" and "learning", the steady progress of informatization of education, and the possibility of integration of information technology and curriculum have become the intrinsic motive and logical starting point of the teaching reform of Civics and Politics courses in colleges and universities, which is the intrinsic demand of deepening the reform of the curriculum and the practical need to promote the innovation of the curriculum by reform [4]–[6]. The practical needs of curriculum innovation [7], [8].

The theory of modern information technology itself is directly a component of modern teaching together with modern educational theory [9]. Contemporary educational practice is showing more and more prominently that modern information technology and the teaching of education in various disciplines are showing an increasing trend of integration. The advent of modern information technology inevitably has a significant impact on the traditional education and teaching of Civics and Politics class in colleges and universities [10].

Civic and political class in colleges and universities to educate people's goals focus more on the cultivation of moral education, ideological and political theory class in colleges and universities in the influence of information diversification, college students are prone to misunderstandings, including college teachers are also prone to psychological faltering, in fact, Civic and political class in the growth of college students to play a role in the growth of college students is crucial [11],

[12], not only to cultivate college students to grow up the necessary theoretical qualities, but also at the same time, to improve their own moral level, to learn to Respect the law of development of things, know what social responsibility is, look at the historical experience and lessons of China's development from a correct theoretical point of view, learn the essence of these historical experiences to build their own life, improve self-knowledge, self-expression ability, so as to enhance their ability to analyze and solve problems, and play their own value of life with a high sense of responsibility [13].

The findings of literature [14] indicate that recent graduates recognize their ideological bubbles, experience work as an important environment for ideological engagement, and show that their college experience did not prepare them to engage with people who hold different ideologies. Literature [15] points out that colleges and universities should reform the traditional mode of ideological and political education, and through the penetration of multidimensional ideological and political education concepts, achieve the purpose of improving the level of ideological and political education in colleges and universities and promoting the overall development of students' comprehensive quality. Literature [16] proposed the combination of ideological and political courses based on AR digital virtual technology and deep learning ideological and political course education analysis technology can significantly and effectively improve the learning progress of contemporary college students. Literature [17] points out that ideological and political education courses in colleges and universities should make full use of the existing software and hardware environment of the campus network to realize the interactive teaching of ideological and political education for college students. Literature [18] pointed out the importance of the Internet, the ideological and political teaching process in colleges and universities, the use of multimedia technology more intuitive explanation of political thought, teachers can through the network and college students to carry out more effective communication, timely understanding of the ideological situation of students. Literature [19] mentions that the construction of the accuracy evaluation index system of ideological and political work in colleges and universities is not perfect, which leads to poor evaluation of the accuracy of ideological and political work in colleges and universities, and proposes the introduction of artificial intelligence and big data technology to improve the accuracy of ideological and political work in colleges and universities.

Based on the innovative path for the construction of the Civics course system proposed in this paper, an innovative technological framework centered on the college course recommendation model and the online teaching system is constructed. In the college course recommendation model, a dynamic key-value memory network based on the forgetting mechanism is proposed to assess students' knowledge level. By adding the forgetting curve to the "reading process" of the original model, the forgetting phenomenon in the learning process is simulated. By combining the predicted number of hidden knowledge points and its correlation with the exercises, the students' mastery of the knowledge points over time is projected. In the online teaching system, based on the construction of the image, and combining the different purposes of the user's needs when using the system, a course recommendation method based on the similarity of the course image and based on the DBN model is proposed. In the recommendation method based on the similarity of the course portrait, when the user clicks on a course, the course with the highest similarity coefficient with the course portrait is selected for recommendation. In the recommendation method based on deep confidence network, the student course portrait features are combined with each other as inputs to the deep confidence network, and the top-N courses are selected for recommendation based on the model's predictive scores. Finally, taking the language majors of University Z as the experimental objects, we carry out the practice of innovative path of Civics course system construction, and explore the practical utility of Civics course system innovation on students' Civics learning by starting from the five aspects of Civics grades, the level of Civics knowledge mastery, the accomplishment of Civics teaching objectives, the satisfaction of Civics teaching and the evaluation of Civics teaching effect, respectively.

II. Path of Innovation in the Curriculum System of Civics Courses

The rapid development of information technology has become an important content of China's education modernization, which puts forward brand-new requirements and strategic opportunities for the innovation of the curriculum system of ideology and politics education and ideology class. Regarding the construction of the curriculum system of the Civic and Political Science Course, this paper puts forward the following two main new ideas.

1) Optimize the curriculum and course recommendations, and strengthen the penetration of the elements of Civics and Politics.
   In view of the characteristics of Civic and Political Education, it is necessary to scientifically design the course system and course recommendation, deeply excavate the Civic and Political elements in the courses, and emphasize the innovation and diversity of the courses to stimulate the students' interest and enthusiasm in learning.
2) Innovate and increase online teaching methods to enhance the effectiveness of Civic and Political Education.
   Traditional teaching methods can no longer meet the needs of modern education, and it is necessary to innovate teaching methods and methods according to the characteristics of Civics teaching in order to improve the effectiveness of Civics education. Combining information technology, designing the Civics online teaching system, and targeting online teaching.

III. Technical Framework for Innovation in the Curriculum System of Civics Courses

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A. Portrait-based Recommendation Model for Civics Courses

1) Student Portrait Construction

1) Basic student information F. F=StudentId, StudentMajor, education, where StudentId is a linear mapping of learnerId, $StudentId \in [1, 5000]$, StudentMajor is the category to which the course belongs, coded in the same relational database order of the given subject category as CourseCategory. education is the student's academic qualification, which is coded in the same order as the given subject category in the database.
2) Student Learning Ability G. For the students' after-school practice into using MIN-MAX normalization is used for scaling the practice score data to [0,1] as an indicator of the students' learning ability. MIN-MAX normalization formula (1):

$$x_{\text{norm}} = \frac{(x - x_{\text{min}})}{(x_{\text{max}} - x_{\text{min}})}, \tag{1}$$

where x is the original data, x_{norm} is the normalized data, and x_{min} and x_{max} are the minimum and maximum values of the data set, respectively.
3) Student Course Selection Characteristics H. The pre-processing process is the same as the course characteristics processing, using hot unique coding.
4) Student Selection Quality Requirement I. is the mean value of the quality of courses taken by students, $I \in [0, 1]$.
5) Student Selection Knowledge Richness Requirement J. Is the mean value of knowledge richness of the courses selected by the students, $J \in [0, 1]$.

2) Portrait-based recommendation methods

In this paper, two recommendation strategies are used in the course recommendation phase, a recommendation strategy based on portrait similarity and a recommendation strategy based on deep confidence networks.

3) Recommendation methods based on portrait similarity

When a user clicks on a course to learn it, the system will first get the information of this clicked course, calculate the similarity between the course image and other course images based on the image feature information of the course, and select the course with the highest similarity for recommendation.

Cosine similarity performs well when dealing with high dimensional data, in high dimensional data, the Euclidean distance may become very large, causing the calculation to become difficult, and cosine similarity can solve this problem because it only focuses on the direction of the vector and does not take into account the length of the vector at the same time the cosine similarity only takes into account the direction of the vector and does not take into account the length of the vector, and therefore will not be affected by the length of the vector formula, so this paper uses cosine similarity as a similarity algorithm and the calculation is shown in (2):

$$\text{similarity}_{i,j} = \frac{(c_i \cdot c_j)}{(\|c_i\| * \|c_j\|)}, \tag{2}$$

where c_i, c_j is the feature vector of the portrait system of a course.

4) Recommendation methods based on deep confidence networks

The approach proposed in this paper involves constructing a sparse matrix to capture the relationships between learners and course characteristics. Specifically, this matrix captures the correlation between basic information about the learner and the course, the relationship between the learner's academic ability and the difficulty of the course, and the relationship between the specific requirements of the course and its characteristics. Using these combined learner and course characteristics as inputs to course recommendation algorithms can improve the quality of recommendation results. Using a probabilistic generative model to generate course prediction scores enables the system to make course recommendations based on these scores.

The learner course matrix is a high-dimensional sparse matrix, which makes it challenging to solve the data sparsity using traditional algorithms, while the deep neural network structure has strong feature learning and feature extraction capabilities, in this paper, we use a deep confidence network, DBN, to obtain the predicted course scores, and by utilizing the DBN model, the system can effectively solve the challenge of data sparsity and improve the accuracy of the course prediction.

In this paper, DBN deep execution network is used as a prediction model, DBN is essentially composed of multiple layers of RBM (Restricted Boltzmann Machine), which is trained to mine and discover the deeper meanings of the features by extracting them layer by layer. Firstly, the raw data is processed by normalization, standardization or feature selection in order to improve the training effect of the model, the first layer of RBM is trained using the training data, the training process needs to extract the features from the input data by Gibbs sampling algorithm, the output of the first layer of RBM is used as the input of the next layer of RBM, and layer by layer training is carried out to finally get the whole DBN model. The whole DBN model is fine-tuned to transform it into a supervised learning model. The fine-tuning can be done using the back propagation algorithm and the model can be optimized using loss functions such as cross entropy.

1) For a dataset consisting of N sample, each sample consists of d features. We represent the dataset as a matrix X where each row represents a sample and each column represents a feature.
2) First, we pre-train the original data X through the RBM of the first layer to obtain the feature representation of the first layer $h(1)$. Specifically, we first input X into the RBM and train it through the back-propagation

algorithm to obtain the weights $w(1)$ and bias $b(1)$ of the RBM.Then, we multiply X by $w(1)$, add the bias $b(1)$ and pass the result through the sigmoid function to obtain the activation value of the first layer $a(1)$ which is calculated as shown in (3):

$$a(1) = \text{sigmoid}(X * w(1) + b(1)). \tag{3}$$

3) Input $a(1)$ into the RBM of the second layer for pre-training to obtain the feature representation of the second layer $h(2)$. Specifically, we input $a(1)$ into the RBM of the second layer and train it by the back propagation algorithm to obtain the weights of the RBM $w(2)$ and the bias $b(2)$. Then, we multiply $a(1)$ by $w(2)$ and add the bias $b(2)$ and pass the result through a sigmoid function to obtain the activation value of the second layer $a(2)$, as Eq. (4) shows:

$$a(2) = \text{sigmoid}(a(1) * w(2) + b(2)). \tag{4}$$

4) Finally, the resulting feature representation $h(L)$ is input into a softmax classifier for training to obtain the final classifier. Specifically, we multiply $h(L)$ by a weight matrix W, plus a bias vector b, and pass the result through the softmax function to obtain the probability that the sample belongs to each category, where K denotes the number of categories, as shown in Eq. (5):

$$\text{softmax}\,(x\_i) = \frac{\exp\,(x\_i)}{\text{sum}\,(\exp\,(x\_j))}, \quad j = 1, \ldots, K. \tag{5}$$

B. Online Civics Teaching System

1) Design of online ideology teaching system

1) Online resource construction

Aiming at the common and unique problems of course teaching, the online course construction is in accordance with the principle of modularization and hierarchization, and a total of five modules are constructed by virtue of the EduCoder platform and the nail platform, and each module can be used after construction and can be continuously expanded and constructed in the process of use.

Source Module. Upload MOOC links, PPTs, Demo presentations, Flash animations and other existing course resources to meet the resource needs at different stages of pre-course preparation, post-course consolidation and post-course review in a hierarchical manner.

Test paper module. Create test papers such as pre-course study test, post-course knowledge consolidation test, midterm test, final test, etc., to hierarchically meet the testing needs at different stages of beginner, intermediate and advanced.

Practical training module. Create and publish the sequential chained storage representation and implementation of linear tables, sequential chained storage representation and implementation of stacks, sequential chained storage representation and implementation of queues, storage representation and implementation of binary trees, storage representation and implementation of graphs, implementation of classical search algorithms, implementation of classical sorting algorithms, etc., which can satisfy the demand for practical training of different knowledge units in a hierarchical manner from the shallowest to the deepest level.

Homework module. Create course group assignments on EduCoder platform, create class groups on Nail platform, and establish mind mapping class topics based on chapter contents, so as to timely grasp students' understanding of different knowledge units.

Questionnaire module. Create and release pre-course questionnaires, midterm questionnaires, final questionnaires and other questionnaires to understand the learning situation and teaching effect at different stages in a hierarchical manner.

Comprehensive statistics for each module, presenting all students' test papers, practical training assignments, group work grades and total grades, dynamically displaying the students' learning process, and understanding the students' learning situation at any time.

2) Online teaching design

Online teaching is mainly designed in terms of online learning, online testing, online practical training, online homework, online tutoring, and learning survey.

MOOC course online learning. MOOC courses are carefully selected to encourage students to pre-study before class and review after class.

Online test. Regular pre-course study, post-course knowledge consolidation test, mid-term and final simulation test, according to the statistical results of the timely grasp of the students' learning situation.

Online practical training. Timed release of practical training, students anytime, anywhere for practical training pass.

Online homework. Establish a class pinning group, submit mind maps in the class circle, and encourage students to judge each other.

Online Tutoring. Online tutoring anytime, anywhere, so that students feel that teachers are always concerned about their learning.

Learning condition survey. Carefully set up questionnaires, use the statistical results to accurately grasp the learning situation of students and teaching feedback.

2) Evaluation Model of Learning Effectiveness of Online Civics Teaching

In the dynamic key-value memory network, the "reading vector" represents the students' mastery of the current exercises, but it does not take into account the "forgetting" phenomenon that occurs in the learning process of the students themselves. Therefore, we propose a model that combines the forgetting curve and the dynamic key-value memory network. The deep learning framework used in this paper is mxnet, and we use lowercase non-bold letters to denote constants, lowercase bold

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Symbol	Meaning
q_t	At t time, the student does the problem number on the problem
y_t	At t time, students do the right answer to the problem set
A	The embedded matrix of problem sets, which contains all the characteristics of the problem sets
k_t	The t moment, the embedded vector of the problem, the vector contains the characteristics of a single problem set
M^k	The key matrix, which represents the hidden concepts of the problem
w_t	The relevant weights of the t moment, the correlation between the problem and the underlying concept
M_{t-1}^v	The value matrix of the $t-1$ moment represents the mastery of hidden concepts
M_t^v	The value matrix of the t moment
M_{t+1}^v	The value matrix of the $t+1$ moment
r_t	The reading vector at t moment
g_t	Time t, the reading vector based on the forgetting mechanism
f_t	The summary vector of the t moment, the difficulty of mastering the level and the previous problem
p_t	At t time, whether students can correctly answer the prediction probability of the problem
(q_t, r_t)	At t time, the question number of the students and the students who are right to answer the question
B	The embedded matrix of all tuples, including all the problem sets and the corresponding meta-group characteristics
v_t	At t times, the embedded vectors of the meta-group of the problem problem and the corresponding answer contain the characteristics of a single unit
e_t	The clear vector at t moment
a_t	The plus vector of the t moment
$Rem(t)$	Memory retention

Table 1: Symbols and their meanings

letters to denote vectors, and uppercase bold letters to denote matrices.

The forgetting curve used in this paper is a power function model, as shown in Eq. (6):

$$\text{Rem}(t) = 0.19 + (1 - 0.19) \times 0.78 \times (1 + T)^{-0.68}, \quad (6)$$

Where $\text{Rem}(t)$ represents the amount of knowledge memorized with a time lag t.

In the dynamic key-value memory network, the reading vector r obtained from the "reading process" represents the students' mastery of the current exercises, but the forgetting law of the students' learning is not considered here, so this paper proposes to combine the forgetting curve with the "reading process" to get the Therefore, we propose to combine the forgetting curve with the "reading process" to obtain the Dynamic Key-Value Memory Network Model (DKVMN-FGC) based on the forgetting curve. Here, the part filled with diagonal lines is the "reading process", the part filled with horizontal lines is the "writing process", and the part filled with solid lines is the forgetting process we introduced.

1) Symbolization
First, some of the symbols used in this section and their meanings are introduced, as shown in Table 1.
Here, we let the set of students be $x = \{x_1, x_2, \cdots, x_s\}$, the set of questions that student i is working on be $q_i = \{q_{1,i}, q_{2,i}, \cdots, q_{t,i}, \cdots\}$, and the corresponding student exercise responses be $y_i = \{y_{1,i}, y_{2,i}, \cdots, y_{t,i}, \cdots\}$. The inputs to the model are of the form:

$$\begin{cases} L_i \\ q_i = \{q_{1,i}, q_{2,i}, \cdots, q_{t,i}, \cdots\}_0 \\ y_i = \{y_{1,i}, y_{2,i}, \cdots, y_{t,i}, \cdots\} \end{cases} \quad (7)$$

where L_i denotes the total count of exercises completed by student i (including repeated completions), where each element of y_i is a 0-1 variable, with 0 indicating that the student answered incorrectly and 1 indicating that the student answered correctly. The exercise label q_t is first multiplied with the exercise embedding matrix $A \in R^{Q \times d_k}$ to obtain the embedding vector k_t of the exercises, i.e., Eq. (8). Where A contains the features of all exercises and k_t contains the features of individual exercises:

$$k_t \leftarrow q_t \times A. \quad (8)$$

Q denotes the total number of exercises with different exercises, while d_k denotes the dimensionality of the exercise embedding matrix (the value is set artificially). In the subsequent Read and Write processes, there is a weight vector w_t, which represents the degree of relevance of the exercise to the underlying concepts. In the Read process, w_t is used as the weight of the value matrix, and similarly for the Write process, w_t is used as the weight of the Clear vector. Thus, we can update the value matrix by discarding invalid content. The correlation weight w_t is obtained by inner product of the embedding vector k_t with the key matrix M^k and using softmax as the activation function, i.e.,

$$w_t(i) = \text{softmax}\left(\overrightarrow{k}_t^T M^k(i)\right). \quad (9)$$

2) "Reading process"
It is well known that the phenomenon of forgetting in the learning process is inevitable. However, the original dynamic key-value memory network model does not take this phenomenon into account, which may not be able to accurately assess the students' knowledge level. Therefore, we add a forgetting curve to the "reading process" to simulate the students' forgetting process.
The original dynamic key-value memory network uses the read vector r_t to summarize the student's mastery of the current exercise. However, after we add the forgetting pattern, the reading vector changes, so we use g_t to represent the student's mastery of the current exercise after following the forgetting pattern. It is represented by Eq. (10) and Eq. (11):

$$r_t = \sum_{i=1}^{N} w_t(i) M_t^v(i), \quad (10)$$

$$g_t(i) = r_t(i) \times \text{Rem}(t)(i), \quad (11)$$

where N denotes the number of potential concepts in the exercise.

Since the law of forgetting suggests that the closer to the current time t, the more knowledge is remembered and vice versa, the less knowledge is remembered. Our inputs are arranged in chronological order, and here the exercise embedding matrix has dimension d_k, so the total lag for each input q_t is d_k. The student remembers 100% of the knowledge at the current time t, with a lag of 1 for t_k, and a lag of 2 for t_{k-1}, so that the amount of knowledge remembered at t_k will be less than at the current time t but more than at t_{k-1}, and the closer it gets to t_1, the less it will be remembered, and so on. and so on. Therefore, we set the time lag to $t = (d_k, d_{k-1}, \cdots, 1)$. Then, we need to multiply the initial reading vector r_t with the elements in the same position as the $Rem(t)$ calculated by Eq. (6) to get g_t. As in the original Dynamic Key-Value Memory Network (DKVMN), we splice the obtained read vector g_t based on the forgetting law with the embedding vector k_t, and then obtain f_t, i.e., Eq. (12), through a fully connected layer with an activation function of Tanh, whereas f_t contains the mastery level of the student and the difficulty of the previously completed exercises:

$$f_t = \text{Tanh}\left(W_1^T \left[g_t, k_t\right] + b_1\right). \tag{12}$$

Finally passing f_t through a layer of fully connected layers with a sigmoid activation function yields the predicted student mastery of the exercise p_t, i.e., the probability that the student will answer question q_t correctly, which in turn reflects the student's current learning effectiveness as shown in Eq. (13):

$$p_t = \text{sigmoid}\left(W_2^T f_t + b_2\right). \tag{13}$$

3) "Writing process"

The "write process" is mainly to update the value matrix. Tuple (q_t, y_t) represents the exercise question number and the student's answer, similar to the previous "reading process", and multiplies tuple (q_t, y_t) by its embedding matrix $B \in R^{2Q \times d_v}$ to obtain the corresponding embedding vector v_t, where B contains features of all tuples and v_t contains features of a single tuple,

$$v_t \leftarrow (q_t, y_t) \times B. \tag{14}$$

Next, we need to update the value matrix, so we need to further calculate the "clear vector" e_t and "add vector" a_t, i.e., Eqs. (15) and (16). The "purge vector" is used to discard the invalid content in the value matrix, while the "add vector" is used to add new content to the value matrix. This means that the value matrix needs to discard the information of exercises that have been completed in the past for a long time, because the longer the interval between the completed exercises in the past and the current time, the less representative they are. At the same time, new exercise information needs to be added.

$$e_t = \text{sigmoid}\left(E^T v_t + b_e\right) \tag{15}$$

$$a_t = \text{Tanh}\left(D^T v_t + b_a\right)^T, \tag{16}$$

where E and D are the transformation matrices and their size is $d_v \times d_v$. Finally, the value matrix can be updated according to the "clear vector", "add vector" and the value matrix of the previous moment, as shown in Eq. (17):

$$M_t^v(i) \leftarrow M_{t-1}^v(i)\left[1 - w_t(i) e_t\right] + a_t, \tag{17}$$

where 1 denotes a vector with all elements 1, M_t^v is the updated value matrix at moment t, M_{t-1}^v is the value matrix before the update, and the weights of e_t use the same original correlation weights $\vec{w}_t$.

IV. Civics Course Curriculum System Innovation Path Practice

In order to verify the effectiveness of the innovative path and corresponding technical framework for the construction of the civic politics course system proposed in this paper, the University of Z was used as the research site, and students majoring in Chinese language and culture were taken as the objects of the study, and an experimental class of 50 students each was set up to carry out a semester-long (6-month) civic politics practice with a control class. The experimental class adopts the innovative path and technical framework for the construction of the Civics course system constructed in this paper to carry out Civics teaching, while the control class continues to adopt the original traditional Civics teaching method.

There is no significant difference in the basic situation of the experimental class and the comparison class. The experiment class and the cross-section are taught by the same teacher. Besides, other teachers and coaches are no longer in the classroom. The experimental class and the cross-verse class unified the idea of the university of z. In the same time, the experimental class and the comparison class were the same as the course of practice. The study of thinking politics and achievement is graded by three teachers who are rich in teaching. In order to ensure the experimental results are fair, the experiment adopts single blind experiment method.

In the following, the effect of practice will be discussed in five aspects, namely, the level of knowledge mastery of Civics, Civics performance, evaluation of Civics teaching effect, satisfaction with Civics teaching, and fulfillment of Civics teaching objectives.

A. Comparative Analysis of Civics Achievements

According to the scoring rules of teaching evaluation, the Civics performance is divided into five parts: final exam grade, usual quiz, project report, classroom attendance and learning enthusiasm, and the Civics performance of the experimental class and the control class before and after the practice is shown in Table 2. Before the beginning of the practice, the experimental class and the control class were tested on the level of Civics and Political Science achievement, from the table, we can see that the experimental class and the control

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class did not show significant differences in all the parts of the achievement and the comprehensive achievement, the P value is much larger than 0.05. From the mean value of the achievement, we can find that the difference between the experimental class and the control class is not obvious either. After one semester of innovative practice in the Civics course curriculum, the experimental class's grades in the four parts of the final exam grade, usual quizzes, project reports, and learning motivation are higher than those of the control class by 2.64, 1.96, 1.08, and 0.92, respectively, with a significant P-value of less than 0.05, which is a significant difference. The composite grade of the experimental class also reached 79.64, which was 7.32 higher than the control class, with a significant P value of 0.008, which is less than 0.01 and has a highly significant difference. After one semester of practical and innovative practice of constructing the curriculum system of Civics and Political Science, the experimental class is obviously better than the control class.

B. Analysis of the level of knowledge of Civics

At the end of the practice, the results of the experiment data and questionnaire survey were used to analyze the difference between the experimental data and the questionnaire survey data. after the experimental class students' level of mastery of Civic and political knowledge was clustered into 4 classes, the clustering results were labeled as four stages of excellent, good, medium and poor according to the mean value, and the specific level of mastery of Civic and political knowledge is shown in Figure 1. Civic and political knowledge mainly includes 6 modules: national consciousness, civic and political theory, moral literacy, practical expansion, international politics, and civic and political calendar and humanities. It can be seen that students with excellent and medium Civics knowledge mastery level is obviously higher, the mean difference in Civics theory, practice expansion, international politics Civics knowledge module are all positive, the average mean difference in the six Civics knowledge modules are 0.27, 0.18. The Civics knowledge mastery level of the students with medium and poor grades is poorer, and the mastery of some Civics knowledge points is getting more and more vague. The average mean difference values in the six Civics knowledge modules are -0.05 and -0.62, which are negative. This shows that the innovative path of Civics curriculum system construction proposed in this paper is relatively unsuitable for students with bad learning habits, so teachers need to pay more attention to students with medium and poor grades in the future teaching reform.

C. Analysis of the fulfillment of Civics teaching objectives

The learning of Civic and Political Teaching Objectives of college students mainly includes six aspects: value pursuit, scientific innovation, responsibility, traditional culture, patriotism and values. The quantitative scores of the experimental class' Civic and Political teaching objectives before and after the practice were counted, as shown in Table 3. In the pursuit

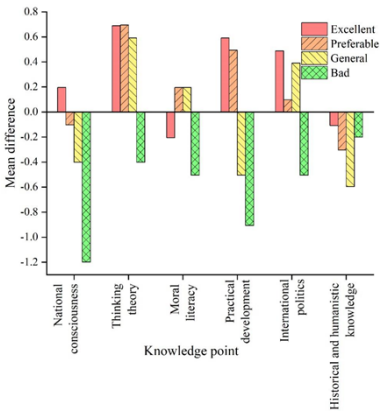

Figure 1: Mean difference of knowledge point

of values, the quantitative scores of the pre-test and post-test were 3.043 and 4.1 respectively, with a difference of 1.057, indicating that the students' overall Civic and political literacy has risen to another level, and that they have a clearer goal for the pursuit of their personal ideals. In terms of scientific innovation, the quantitative ratings of students in experimental situations are 3.527 and 3.962 respectively, with a difference of 0.435, indicating that students have more knowledge and understanding of scientific and cultural knowledge. The change in the difference value in the area of responsibility and bearing is 0.248, which is not a big change, but it also shows that students' sense of responsibility and bearing is getting stronger. In addition, in the three aspects of traditional culture, patriotism and values, the difference between the experimental class students before and after the practice is 0.789, 0.264 and 0.309 in turn, which shows that the students have more sense of identity and pride in traditional culture, revolutionary culture, etc., and deeper understanding of social development and historical development, and the patriotic sentiment also prompts the students to go from the theory to the practice, and the students are willing to link their own ideal with the development of the country. The curriculum is only just beginning in the process of thinking politics. The course is not added, and the course is also a combination of physical education and thinking politics, rather than political class, in the course of physical education, which can be used in the course of the teaching process, which can be used in the teaching process, and the curriculum is integrated into the teaching and ability culture of the course, and fully mining the course of the course.

D. Analysis of Civics Teaching Satisfaction

After carrying out a semester-long practice of Civics teaching, a satisfaction survey was conducted on the students of the experimental class, and a score of 1-5 was assigned according to the order of strongly, disagree, disagree very much, generally, basically, and completely agree, and the specific satisfaction situation is shown in Table 4. From the table, it can be seen that the mean values of value orientation, integration

Test variable	Achievement	Experimental class	Control class	T	P
Before experiment	Final test	31.37	31.52	0.659	0.822
	Normal test	16.98	16.51	-1.552	0.354
	Project report	8.34	8.32	0.653	0.994
	Classroom attendance	9.95	9.25	0.11	0.642
	Learning initiative	7.01	7.43	-1.434	0.458
	Comprehensive achievement	73.65	73.03	-1.524	0.354
After experiment	Final test	35.14	32.5	1.865	0.035*
	Normal test	17.21	15.25	1.179	0.026*
	Project report	9.24	8.16	1.995	0.03*
	Classroom attendance	9.85	9.13	0.603	0.541
	Learning initiative	8.2	7.28	0.529	0.047*
	Comprehensive achievement	79.64	72.32	-1.947	0.008**

Table 2: Ideological and political achievements

-	Before experiment	After experiment	-	
Evaluation content	Evaluation value	Evaluation value	Mean value	Difference value
Value pursuit	3.043	4.1	3.484	1.057
Scientific innovation	3.527	3.962	3.65	0.435
Responsibility	3.739	3.987	3.853	0.248
Traditional culture	3.335	4.124	3.805	0.789
Patriotism	3.687	3.951	3.761	0.264
Value	3.614	3.923	3.744	0.309

Table 3: The goal of ideological and political teaching

of civics, civic resources, discussion and interaction, reflection and evaluation, activity organization, technical support, resource pushing, and two-line teaching are 3.7705, 4.0255, 3.976, 4.2005, 4.0215, 3.866, 4.289, 3.9605, and 4.183 in order, all of them are more than 3 and close to the value of 4, which means that students who chose "basic agreement" in the feedback of the experimental class were more than 3 and close to the value of 4. Students choose "basically agree" in the student feedback, students think that the content of Civics teaching is rich, can lead the ideological quality, moral sentiments, and has a certain value leading role, and students recognize the Civics classroom during the practice period.

E. Evaluation and Analysis of Civics Teaching Effectiveness

In this section, grades are used to assess the teaching effectiveness of the experimental class in the Civics course after one semester of innovative practice in the Civics course curriculum, and the four primary indicators of the Civics teaching effectiveness, namely, knowledge transfer, Civics professionalism, ideals, and behavioral performance, and their corresponding secondary indicators, are divided into three grades: good, fair, and poor, respectively. The score range for the three levels is 0.9 (including 0.9) for "Good", between 0.7 (including 0.7) and 0.9 for "Fair", and below 0.7 for "Poor". Table 5 shows the evaluation of the effect of ideological and political teaching in the experimental class. It can be seen that after one semester of innovative practice in the Civics course, the scores of the four first-level indicators are all higher than 0.9, and the grades are all "good", indicating that Civics teaching has achieved better results in these four aspects. The four indicators were ranked according to their scores, from largest to smallest, as ideal belief, behavioral performance, knowledge transfer and Civics professionalism, among which the ideal belief indicator scored the highest, 0.995. And among the 12 secondary indicators, except for the score of Civic Culture, which is 0.886, less than 0.9, the scores of the remaining 11 indicators are all higher than 0.9, indicating that the Civic Teaching of the Civic Program can achieve the expected effect in these 11 aspects. In the subsequent Civics teaching, adding timely and appropriate amount of Civics culture content is conducive to further improving students' understanding and interest in Civics culture.

Overall, through the innovative practice of the Civics course curriculum, students also have a better understanding of current affairs and politics, the level of mastery of Civics knowledge has been improved, moral and rule of law and other aspects of the quality has been improved, Civics performance is more ideal, the Civics teaching objectives have been accomplished well, and the students' satisfaction with the Civics teaching is also higher.

V. Conclusion

This paper first proposes an innovative path for the construction of the curriculum system of the Civics and Political Science course, and on this basis builds an innovative technological framework centered on the college curriculum recommendation model and the online teaching system. In the innovation of the Civic and Political Science course curriculum system, the students of language majors in University Z are taken as the experimental objects to explore the innovation practice. The study draws the following conclusions:

1) In the Civics performance, the experimental class and the control class do not show significant difference in all the performance parts and the comprehensive performance before the practice, and the P-value is much larger than 0.05. After the practice, the comprehensive performance of the experimental class also reaches

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Goal	Content	Mean value		Standard deviation	
Value orientation	I think thinking politics is a pleasure	3.688	3.7705	1.11	1.0685
	I learned more about the political agenda in thinking in the classroom	3.853		1.027	
Political integration	The content of thinking is strong situational and the induction is strong	3.934	4.0255	1.104	1.1045
	The content of thinking and the teaching of classroom teaching are better	4.117		1.105	
Thinking resources	The teaching content has the theme of the education	4.1	3.976	0.986	1.1435
	There is a rich resource of thinking in classroom teaching	3.852		1.301	
Discussion interaction	In class learning, you can discuss the topic of thinking about politics	4.56	4.2005	0.528	0.8635
	In class, there is plenty of time to think	3.841		1.199	
Reflective evaluation	In the conclusion, teachers can always draw on the idea of the article	4.164	4.0215	0.929	1.101
	I think the evaluation is rich in diversity	3.879		1.273	
Active organization	I understand the importance of solidarity in the group activities	3.806	3.866	1.206	1.172
	Practice makes me deeper understand the education	3.926		1.138	
technical support	I learned to learn using modern information technology	4.56	4.289	0.95	1.056
	The classroom that is supported by modern technology has promoted my learning	4.018		1.162	
Resource push	Online courses provide me with more learning resources	3.797	3.9605	1.276	1.2495
	The message of the teacher's push is very deep for all of me	4.124		1.223	
Double line teaching	I like the way online and offline are combined	4.317	4.183	0.991	1.0445
	Double line teaching can adjust my learning status well	4.049		1.098	

Table 4: The satisfaction of ideological and political teaching

Primary indicator	Score	Evaluation	Secondary indicator	Score	Evaluation
A Teaching of knowledge	0.969	Good	A1 value	0.981	Good
			A1 Principle of dialectical materialism	0.983	Good
			A3 Political culture	0.886	General
B Political professionalism	0.921	Good	B1 Scientific method	0.905	Good
			B2 Rational thinking	0.914	Good
			B3 thinking	0.941	Good
C Ideal belief	0.995	Good	C1 patriotism	0.914	Good
			C2 Personal character	0.951	Good
			C3 social responsibility	0.946	Good
D Behavior	0.986	Good	D1 classroom performance	0.981	Good
			D2 practical activity	0.95	Good
			D3 Homework	0.989	Good

Table 5: The evaluation of ideological and political teaching

79.64, which is 7.32 higher than that of the control class, and the significance P-value is 0.008, which is smaller than 0.01, and it has a highly significant difference. The innovative path of the curriculum system of the Civics class proposed in this paper has a better effect on the students' performance in Civics.

2) Cluster analysis of the experimental class students' Civic and political knowledge mastery level after practice, the students with the categories of excellent and medium Civic and political knowledge mastery level enhancement is obviously higher, while the students with the categories of excellent and medium Civic and political knowledge mastery level enhancement is obviously higher, in the six Civic and political knowledge modules, the mean average difference values are -0.05, -0.62, respectively, both are negative. The innovative path proposed in this paper is relatively inapplicable to students with bad learning habits, and it is necessary to pay more attention to students with medium and poor grades and give them more guidance and help in teaching Civics.
3) In the quantitative scoring of ideological and political teaching objectives, the difference between value pursuit, scientific innovation, and responsibility before and after practice was 1.057, 0.435, and 0.248. In the three aspects of traditional culture, patriotism and values, the differences between the students in the experimental class before and after practice were 0.789, 0.264 and 0.309, respectively. Obviously, after the innovative practice of the ideological and political curriculum system, the completion of the ideological and political teaching objectives is good.
4) In the satisfaction survey of the ideological and political teaching practice of the experimental class, the mean values of value orientation, ideological and political integration, ideological and political resources, discussion and interaction, reflection and evaluation, activity organization, technical support, resource push, and double-line teaching were 3.7705, 4.0255, 3.976, 4.2005, 4.0215, 3.866, 4.289, 3.9605, and 4.183, all of which exceeded 3 and were close to the value of 4. Students are more satisfied with the ideological and political teaching mode and ideological and political classroom during the practice period.
5) In the evaluation of the effect of Civics teaching at the end of the experimental class, except for the score of Civics culture, which is 0.886, less than 0.9, the scores of the other 4 primary indicators and 11 secondary indicators are all higher than 0.9, and the grades are all evaluated as "good". Based on the innovative path and

technical framework proposed in this paper, the innovative practice of the Civics course curriculum system has achieved good results in the actual application of Civics teaching.

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