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## Research on the integration and development of student management and ideological and political education in universities based on environmental psychology

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### Abstract

To cultivate college students to become new intellectuals with virtue and talent who master modern scientific and cultural knowledge and are physically healthy. This paper constructs a model of college student management and ideological and political education based on environmental psychology. The CIPP evaluation mechanism is used to analyze the appropriateness of the effectiveness of ideological and political education in colleges and universities, calculate the weight values among the indicators according to the priority relationship among environmental psychology indicators, input the evaluation data into the database information management layer for compression processing through multi-level analysis, and pass into the indicator adjustment layer as well as the data mining layer for a comprehensive evaluation of the effectiveness of ideological and political teaching, which proves that it can promote student management and ideological and political education. It is proved that it can promote the integration of student management and ideological and political education. In this paper, three classes of universities were selected for the experiment, and it was proved that the average score of the ideology factor increased from 64.42 to 82.96 under the environmental psychology teaching model, and the classroom head-raising rate of students increased by more than 10%. It shows that the application of the environmental psychology teaching model to students' Civic Education in colleges and universities can significantly improve students' ideological and political level, can keep up with the changes in the social environment for effective management of students, and promotes the integration development of student management and Civic Education.

**Keywords:** Environmental psychology teaching model; Ideological and political education; Multilevel analysis method; CIPP evaluation mechanism; Index extraction

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## 1 Introduction

With the progress of society, the importance of ideological and political education in colleges and universities is increasing, which also promotes the formation of the ideological and political education system [1]-[3]. As for colleges and universities, teaching and management are elements that cannot be ignored [4]-[5]. Therefore, to manifest the nurturing value of ideology and politics, it is crucial to be closely connected with the management practice of students, and through the analysis of the necessity and feasibility of ideology and politics penetrating student management, the nurturing effect of ideology and politics can be effectively brought into play [6]-[10]. Colleges and universities should integrate ideological and political education activities with student management activities [11]-[12]. On top of the continuous improvement of the quality and efficiency of student management work, the level of students' ideological and moral cognition should be improved comprehensively, and the core literacy of the majority of students should be enhanced comprehensively [13]-[15]. At the same time, it is necessary to care for students and respect them, and also to understand the actual demands of students and the basic laws of their physical and mental development based on the basic concept of humanism, and to design and plan ideological and political education activities with the support of students' basic demands [16]-[17]. Presently, student management activities are constantly changing and innovating, so universities should also play a supportive role in ideological and political education so that every student can become a disseminator and promoter of advanced ideology and politics [18]-[19].

Student management in higher education has become quite different from what it was before. Therefore, to maintain the high quality of student management activities, the integration of ideology and politics is essential, as well as the active change and innovation of traditional educational methods. The literature [20] emphasizes that student subjects are in a critical period of continuous mental maturity and development, their self-esteem is relatively strong, and they are prone to resistance and rebelliousness. The literature [21] indicates that the current management of the ideological and political theory courses for college students is more problematic in both macro and micro aspects, and the optimization of the ideological and political education activity model should be carried out based on the basic principle of rigidity and flexibility. The literature [22] points out that synergy development in educational management work is still in the initial exploration stage, and the relevant theoretical system is not mature enough. This leads to many dilemmas and crises in the synergistic development of management activities and university students' ideological and political education activities. According to the literature [23], the reason for this is that the relevant institutional mechanism is not complete, and from the overall analysis, the organization and management departments of colleges and universities are still fully responsible for managing students in colleges and universities, which makes it difficult for educators to have the right to speak, let alone to put forward effective suggestions and recommendations for improving the organization and management of colleges and universities. In the literature [24], students are taught the knowledge corresponding to their stages to digest and internalize. In the literature [25], in the process of comprehensive promotion of student management activities, practical problems should still be used as a basic guide to develop personalized solutions and build a solid platform to support the high-quality development of management practice activities. It is difficult for ideological and political education to effectively support and guide student management activities. The literature [26]-[27] suggests that the strengthening of ideological and political education should be important, and a collaborative education mechanism should be actively constructed to improve the quality and efficiency of student management. However, the literature mentioned above puts forward the paths of combining ideological and political education with student management, such as strengthening patriotism education, deepening ideal and belief education, and improving the ideological and political curriculum system. However, there are still problems, such as the lack of top-level design, the lack

of standardized cooperative development mechanism, the lack of real formation of human education synergy, and the phenomenon of “silo” and “fragmentation” in the collaborative development of student management and ideological and political education in colleges and universities.

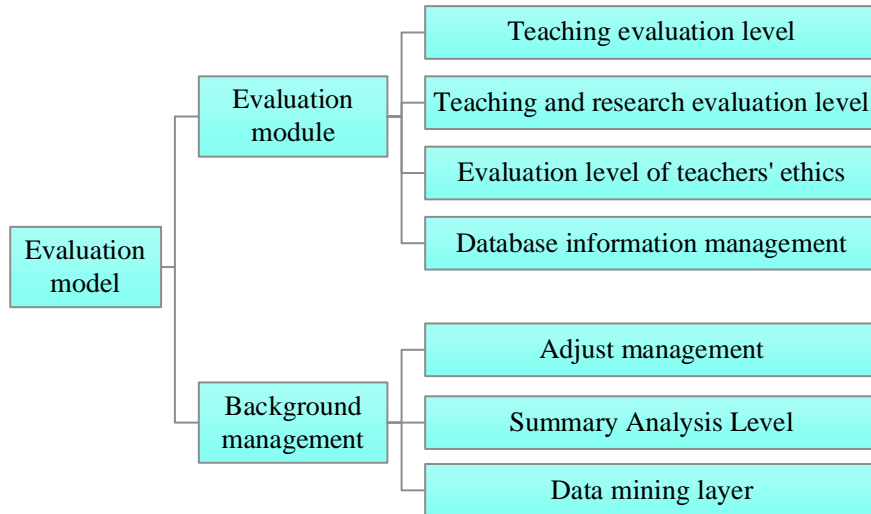
Based on the teaching model of environmental psychology, this paper explores a new model of student ideological and political education to integrate student ideological education and college student management. Environmental psychology teaching combines physical classroom and online education. Using the CIPP evaluation mechanism to design ideological and political teaching, firstly, the environmental psychology index extraction method is used to inform the data of college student management to calculate the weight value among evaluation indexes. Secondly, the evaluation data of ideological and political education is input into the database information management by multi-level analysis method, and data mining is carried out according to the calculation results. Finally, the teaching model of environmental psychology based on the context of environmental psychology was practiced. It is proved through experiments that the teaching model of environmental psychology can promote students' ideological and political education and is beneficial to the management of college students.

## **2 Environmental Psychology Teaching Model**

### **2.1 CIPP evaluation mechanism**

The CIPP evaluation model, also known as the “decision evaluation model,” consists of four components: background evaluation, input evaluation, process evaluation, and outcome evaluation. It allows teachers and students to participate in the design and implementation of the course and incorporates their specific performance into the main content of the evaluation, thus avoiding the emphasis on outcome evaluation instead of process evaluation. The specific contents are shown in Figure 1.

The CIPP evaluation model can reflect the overall situation of the evaluation object more comprehensively and systematically, focus more on process assessment and feedback, and have the dynamic evaluation characteristics of planning, organizing, implementing, and recycling. The model is divided into an evaluation module and a backstage management module, with teacher evaluation as the main focus, combined with systematic learning data, combining online and offline learning formative evaluation and summative evaluation, and a backstage management module to evaluate the effect of mixed practice teaching of environmental psychology from multiple perspectives. The CIPP evaluation model can fully reflect the evaluation's objectivity, diversity, and interactivity and fully stimulate students' independent learning motivation in environmental psychology. The CIPP evaluation mechanism can be used to evaluate relevant studies in general. This paper also uses the CIPP evaluation mechanism to examine relevant factors and data.



**Figure 1** Structure of the CIPP evaluation model

## 2.2 Environmental psychology index extraction

The importance of environmental psychology indicators was calculated by prioritizing relationships to extract an indicator system with high internal consistency. One primary indicator  $a_i$ , one secondary indicator  $a_j$  and one tertiary indicator  $a_k$  were randomly selected, and the indicator correlations between primary indicators and other indicators after removing the redundant effects of other hierarchical indicators were calculated as:

$$\lambda_i = \frac{a_i - a_j}{\sqrt{2} \partial} - \frac{3a_k}{\eta} \quad (1)$$

In equation (1),  $a_i$  is the correlation of primary indicators,  $a_j$  is the correlation of secondary indicators, and  $a_k$  is the correlation of tertiary indicators.  $\partial$  is the dispersion value of the data, which is obtained by calculating the difference between classes in the spatial distribution of the data.  $\eta$  is the number of indicator levels, and the value is set to 3. Other levels  $\lambda_i$  and  $\lambda_k$  can also be obtained by this method.

After removing the redundant relationships between indicators, the priority relationship between indicators is calculated based on the relevant environmental indicators, and the priority relationship threshold between the primary and secondary indicators is determined first. The relationship threshold  $A$  is derived by the form of equation (2):

$$A = (\lambda_i - \lambda_j) / \frac{\sqrt{0.5}}{\partial} \quad (2)$$

Where:  $\partial$  is the discrete value of the data. This is used to determine who is the priority of primary and secondary indicators in the model. This is used as the basis for calculating the priority relationship between the tertiary indicators and the first and second level indicators. The priority relationship threshold  $B$  is obtained as in equation (3):

$$B = \frac{\lambda_k - \lambda_i - \lambda_j}{2n} / \frac{\sqrt{0.5}}{\partial} - A \quad (3)$$

Where:  $n$  is the interference coefficient, generally 1.

Based on the fuzzy relationship between each index, in addition to the threshold value, it is also necessary to calculate its internal consistency index, which is a very important factor for index selection:

$$p = \frac{A}{2n} / \frac{\sqrt{2}B}{\varepsilon} \quad (4)$$

In equation (4): The indicators with higher consistency with the assessment objectives are selected so that the extraction of environmental psychology indicators in the evaluation system is completed, and the weights among the indicators are calculated according to the indicator data.

The difference between the evaluation indicators, i.e., the weight of each indicator, is derived by the entropy weighting method:

$$w_i = \frac{A-\varepsilon}{m^2} + \frac{B}{2a} - \log_2 p \quad (5)$$

In the above equation:  $a$  is the indicator of the unevaluated object, with  $m$  comments. The individual evaluation indicators are evaluated individually:

$$f(u) = \frac{AB}{2a} - \sum_{i=1}^3 \lambda_i - \log_2 \theta \quad (6)$$

Where:  $\theta$  is the frequency of occurrence of each indicator. A weighting process is applied to  $f(u)$ , i.e.:

$$R = \sum_{i=1} w_i - \log_2 \theta + f(u)|\tau^3| \quad (7)$$

In the above equation:  $\tau$  is the weight difference of each indicator.

The weights of each factor in the fuzzy matrix are calculated by the relevant formula above, and the corresponding weights of each factor are taken:

$$\begin{cases} W_1 = \{0.125 & 0, 0.235 & 0, 0.215 & 0, 0.175 & 0, 0.160 & 0\} \\ W_2 = \{0.270 & 8, 0.266 & 7, 0.250 & 0, 0.208 & 3\} \\ W_3 = \{0.383 & 3, 0.316 & 7, 0.300 & 0\} \end{cases} \quad (8)$$

Correlation test for environmental psychology index weights  $W_e \in \{W_1, W_2, W_3\}$  to optimize the reliability of evaluation index weights:

$$r = \sum_{e=3} W_e - \frac{F+\varphi}{2R} + \log_2 \theta \quad (9)$$

Where:  $F$  is the degree of freedom of correlation test,  $\varphi$  is the significance threshold of correlation. In this way, the reliability of index weights is optimized and an accurate evaluation model is constructed.

### 2.3 Multi-level analysis method

In constructing the hierarchical model, the problem of data storage volume under the influence of environmental psychology indicators is first considered. At the database information management

level, the data to be evaluated are compressed, and the redundant data are removed, and the specific process is shown in equation (10):

$$U = \frac{F+\varphi}{2R} + \frac{T-Y}{3a_i} \quad (10)$$

Where:  $T$  is the data bit of the target to be evaluated, and  $Y$  is the redundant data byte.

The information management data is input into the evaluation index adjustment management to aggregate and analyze the evaluation result data of each evaluation layer for comparison, and the process is as in equation (11):

$$Z = \frac{T-Y}{3\lambda_i} + \frac{\sum_{k=1} \lambda_k - t}{2n} \quad (11)$$

Where:  $t$  is the decision target order. The analyzed data are passed to the evaluation result summary layer for summative analysis of the data, as in equation (12):

$$E = \frac{(T-Y)^2}{AB} + \frac{2Kn}{Z} \quad (12)$$

In the above equation: The aggregated information is input into the evaluation result data mining layer, and the data mining of the evaluation result is completed by the association rule mining algorithm, as in equation (13):

$$E_i = \frac{2Kn}{Z} (E - \log_2 x)^2 + \sum_{i=1} w_i \quad (13)$$

Where:  $x$  is the conditional probability. Based on the data collected from lecture evaluation, teaching and research evaluation, and teacher moral evaluation, the hierarchical evaluation model was constructed by the multi-layer fusion method as:

$$V = \sum_{i=1}^3 w_i (E_i - \log_2 x)^2 + \sum_{i=1}^3 \lambda_i \quad (14)$$

In the above equation:  $V$  is a fixed constant. The matrix normalization equation is:

$$b_{ij} = \frac{a_{ij}}{\sum_{i=1}^n a_{ij}}, i, j = 1, 2, \dots, n, \quad (15)$$

In Eq. (15):  $a_{ij}$  indicates the comparison result of the  $i$ nd factor to the  $j$ rd factor.

In the process of constructing evaluation indexes using hierarchical analysis, the matrix has consistency when the  $n$ -order matrix  $\lambda_{max} = N$ . When  $\lambda_{max} \neq N$ , then judge whether C.R. is less than 0.1,  $C.R. < 0.1$ , then its matrix is considered to have credibility. The average random consistency index R.I. is obtained according to the order of the judgment matrix:

$$C.R. = \frac{C.I.}{R.I.} = 0.05362 < 0.1 \quad (16)$$

where:  $C.R. < 0.1$ , so the values of the primary index weights derived from the hierarchical analysis method are credible. Similarly, the weights of secondary and tertiary indicators were calculated, and the results are shown in Table 1. In the evaluation index system of curriculum thinking and politics,

the weights of the first-level indicators are, in descending order, course input (0.45), course effect (0.13), and course background (0.09), among which course input and course effect occupy a large proportion in the evaluation system of curriculum thinking and politics. Although it has a low weight value, course context plays an indispensable role in teaching development. In ranking the weight of secondary indicators, the weight of the course method in the evaluation element of course input is 0.2429. Therefore, the evaluation index should focus on selecting and designing means and teaching methods.

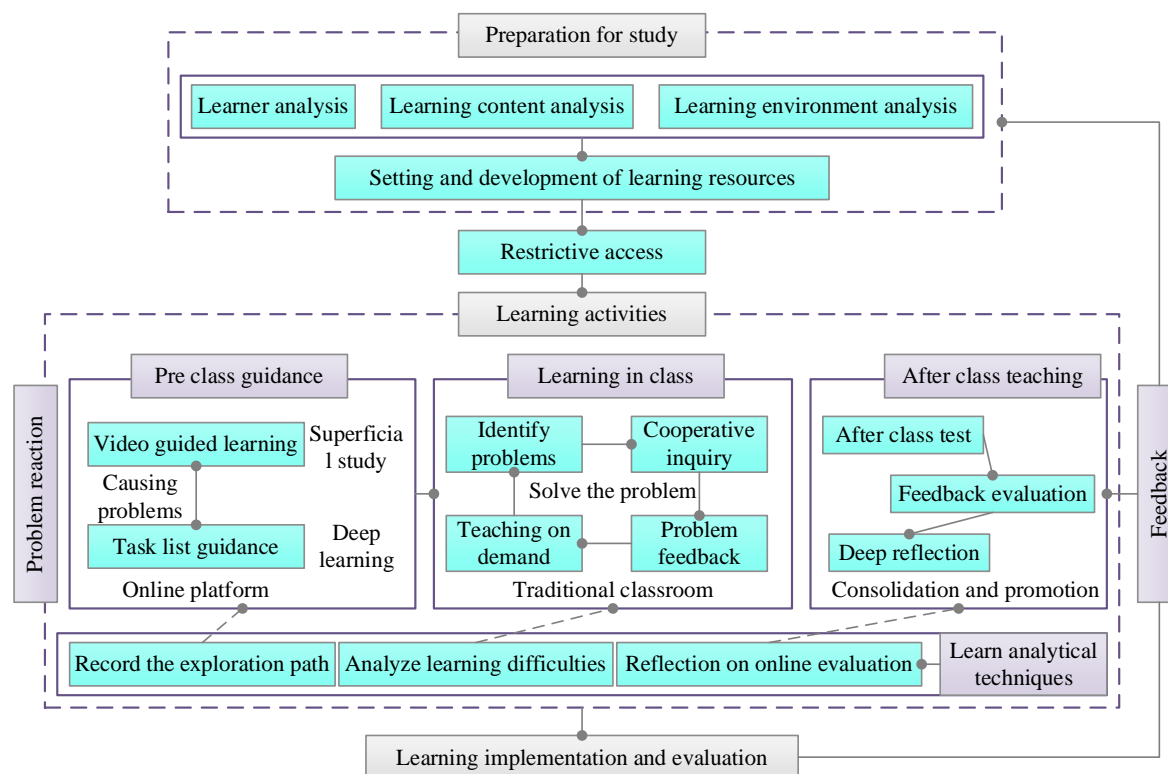
**Table 1** Curriculum Civics Evaluation System Based on CIPP Model

Tier1 indicators	Weight	Secondary indicators	Weight	Three-level indicators	Weight
B1	0.09	C1	0.0609	C11	0.0457
				C12	0.0203
		C2	0.0305	C21	0.0061
				C22	0.0102
B2	0.45	C3	0.1336	C31	0.0334
				C32	0.1002
		C4	0.0735	C41	0.0176
				C42	0.0453
B3	0.13	C5	0.2429	C51	0.0599
				C52	0.0283
		C6	0.0810	C61	0.0039
				C62	0.0116

## 2.4 Environmental Psychology Learning Structure

In a large social environment such as school, teachers have limited knowledge to impart daily, and students' minds are easily restricted. The environmental psychology teaching model relies on the Internet and mobile learning, which can solve the limitation of "time and space" in traditional ideological and political teaching. The environmental psychology teaching model is an innovative teaching model to promote students' personalized learning. Students are no longer restricted by time and space and can independently arrange ideological and political learning activities. The model combines online and offline teaching, relying on each other to form a complete teaching process. The specific steps are shown in Figure 2.

Conducting environmental psychology teaching can extend classroom teaching outside the classroom and realize the advantages of an organic combination of online learning and face-to-face teaching. Rich teaching resources can meet students' personalized learning needs, and teachers can keep abreast of students' learning effects and participation. Hybrid teaching from three stages, such as pre-class learning, in-class study, and post-class practice and evaluation, enriches and enlivens the ideological and political education classroom but also helps improve the ideological and political teaching effect. The multi-directionality and feedback of the teaching platform make students indirectly become the designers of ideological and political teaching content and participants in teaching reform. It is conducive to students' rational use of fragmented time to achieve efficient learning and improve students' participation in online ideological and political learning.



**Figure 2** Structure of the learning process of environmental psychology

In summary, firstly, we use CIPP to establish the evaluation system of curriculum thinking and politics, then use hierarchical analysis to determine the weight value of the index system, and finally establish a relatively complete index system of curriculum thinking and politics. From the above data, it can be concluded that environmental psychology teaching is objective, diversified, and interactive, which can fully motivate students to learn ideology and politics independently and can strengthen the integration of student management and ideology and politics education.

### 3 Analysis of model effects based on environmental psychology

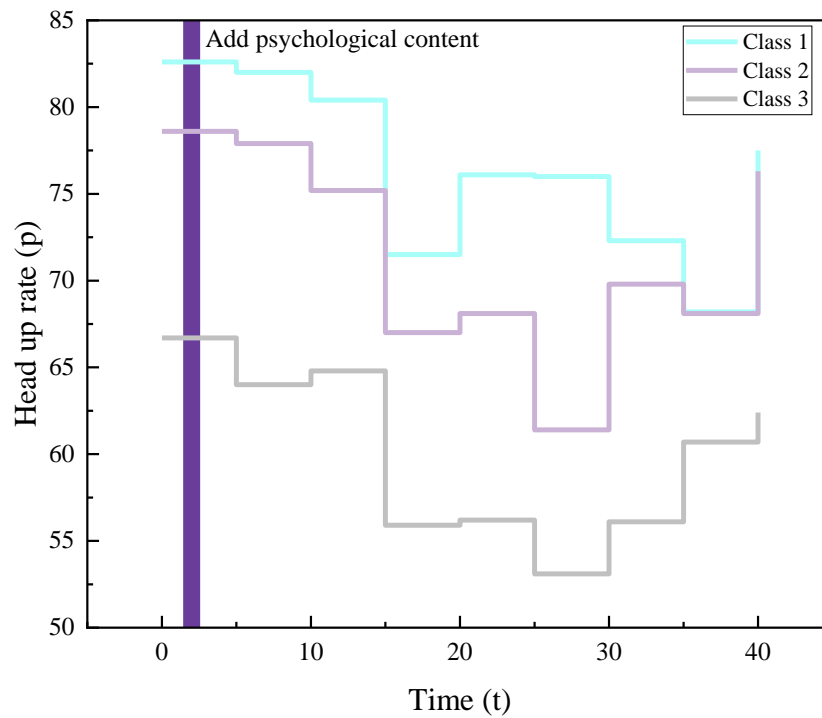
This paper uses environmental psychology as the theoretical basis and the psychological needs and behavioral characteristics of modern college students as the basis to carry out college students' ideological and political education by using the environmental psychology teaching model. Through the environmental psychology teaching model, a diverse learning environment is created. Positive psychology is the basic trait that people should have. Psychology is a way to promote the positive psychological potential of individuals through psychological guidance and diversion, to help them form positive and positive psychological self-protection mechanisms, and then to strengthen their resistance to negative thoughts and emotions. The integration of psychology into ideological and political education can further strengthen the penetration of ideological and political education, help students raise their awareness of ideological and political learning, and prevent them from resisting the stimulation of their potential.

#### 3.1 Analysis of the head-up rate of Civics classroom

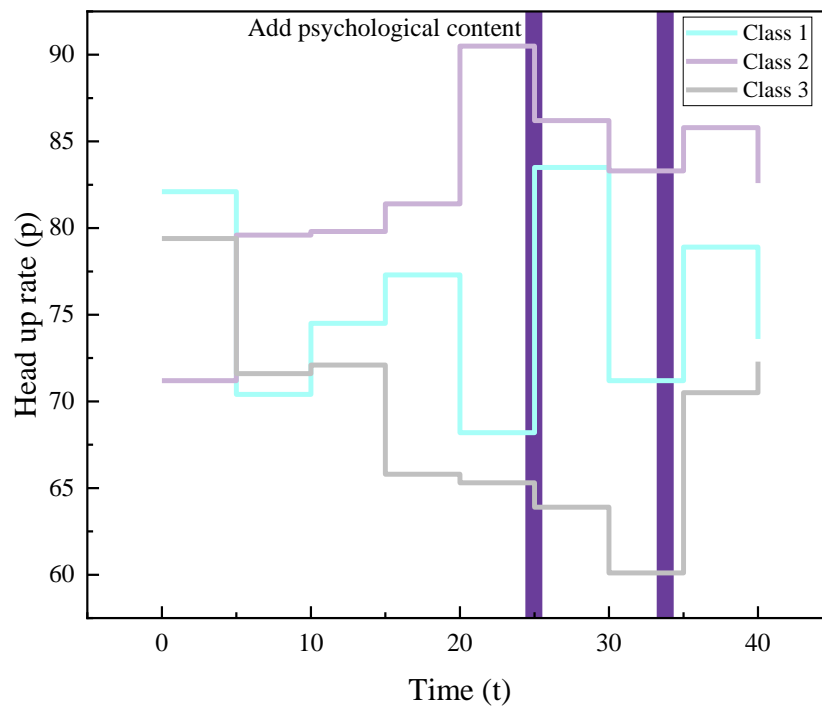
In this paper, 200 students from three classes in colleges and universities were selected for the experiment, and two open Civics classes were conducted. Including the content of interest to students in the classroom will re-attract students' attention. This experiment incorporates psychological



content in Civic Education, and the real-time status of students in the classroom was observed by using the school classroom monitoring equipment, and the changes in students' head-up rate  $p$  in the classroom were counted, as shown in Figure 3.



(a) The first section of the Civics classroom state map



(b) The second section of the Civics classroom state map

**Figure 3** Students' head-up rate in different classrooms

As can be seen in Figure 3(a), the 1st Civics course put psychology content in the introduction part of the class for about 2 minutes, and the highest head-up rate of students was 82.6%, which was the most focused period of the whole class. In the second class, the first 2 minutes were spent on regular teaching without the psychology content, and the highest head-up rate of students was 82.1%. However, as class time increased, the head-up rate decreased to a minimum of 55.9%, a decrease of 26.7%. By placing the instructional content containing psychology in the introductory part of the class, the difference in the heads-up rate between the two lessons was not significant, but the overall heads-up rate of the two lessons was significantly higher in lesson 2 than in lesson 1.

It is clear from Figure 3(b) that the psychology content added in session 2 consisted of two parts, placed in the second half of the entire session, for about 3-4 minutes. The graph shows that the period when the psychology content was added had the highest student head-up rate for the entire class, reaching a maximum of 90.5%. In the middle and later parts of the class, the addition of the psychology content significantly increased the head-up rate, while the head-up rate in the later part of the first class decreased. To a certain extent, the appropriate addition of psychological content plays an important role in motivating interest and emotion in the later part of the class. This shows that the addition of psychological elements in the classroom has significantly increased the classroom attraction of students, a more positive learning state, and a relatively harmonious classroom atmosphere, which can be better managed for students.

### 3.2 Analysis of ideological and political achievements

Civics teachers should grasp and understand students' state of mind in real-time and carry out educational work in response to students' state of mind and problems in Civics education. If psychology is integrated into Civics education, it can provide a comprehensive understanding of student's mental health, classroom performance, and psychological state from a psychological perspective, which strengthens the ability of students to change their state of mind, and Civics teachers can carry out teaching planning from the ideological feedback and psychological environment dimension, and adjust education and teaching direction in time, thus creating conditions for improving Civics education in colleges and universities. Teachers teach students according to the mechanism of the environmental psychology platform, improve the efficiency of classroom learning, and supplement various knowledge points and background knowledge of Civics at any time. During classroom teaching, students can ask questions to teachers at any time to solve problems in learning. The use of the environmental psychology teaching model not only meets the development needs of the new era but also allows students to collect relevant resources better and facilitates better learning. This experiment is based on the environmental psychology teaching model to test students' ideological and political performance. The students' ideological and political grades consist of two parts: the final grade and the midterm grade. The school self-administered midterm test and the final one is a joint examination. Independent sample tests analyzed the experiments on the scores of the tests, and the results are shown in Table 2. The midterm Civics score in the traditional classroom model was 53.43, 13.38 points lower than that in the environmental psychology teaching model. The final score was 58, 6.41 points lower than that under the environmental psychology teaching model. The midterm test result was  $P=0.042$  ( $<0.05$ ), and the final test result was  $P=0.037$  ( $<0.05$ ), which was nearly two times higher than before using the model, indicating a significant difference in performance between the two models.

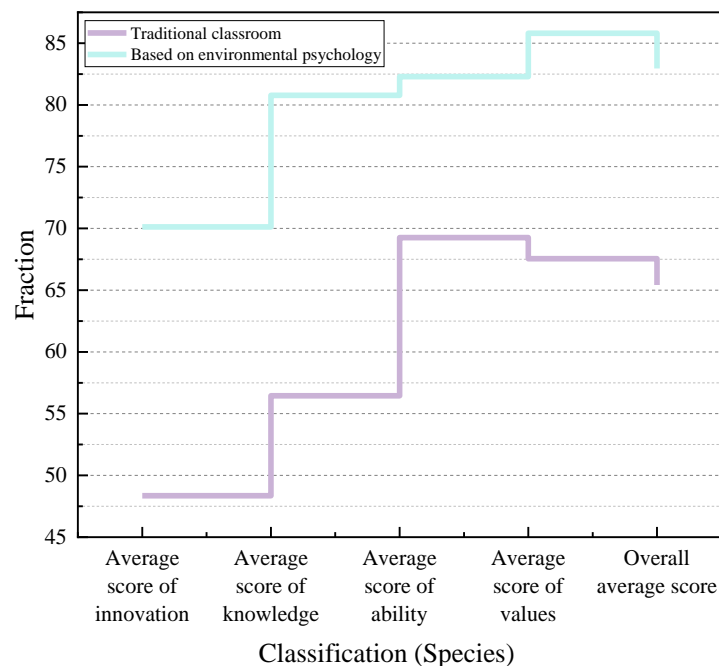
**Table 2** Comparison of Civic Achievement under Different Models

	Classroom mode	Sample size	Average grade	Standard deviation	P-value
Midterm	Traditional mode	47	53.43	13.548	0.042
	Environmental Psychology mode	46	66.81	11.556	
Final	Traditional mode	47	58	11.542	0.037
	Environmental Psychology mode	46	64.41	8.995	

From the above data, it can be concluded that environmental psychology teaching is objective, diversified, and interactive and can fully motivate students to learn ideology and politics independently. The research on the integration and development of student management and ideological and political education in colleges and universities based on environmental psychology proves a mutually reinforcing relationship between ideological and political education and student management. The former focuses on the transfer of theoretical knowledge and advocates using correct values to guide students to establish correct ideological concepts and make the overall work develop in the direction of more institutionalization and standardization. Therefore, the two should be combined to educate and manage students with rigidity and flexibility. The flexibility of Civic Education should be fully utilized to standardize the management of students' daily activities and improve the quality of education and management.

### 3.3 Teaching Effect Analysis

The ability to actively explore, innovate, and master the knowledge of Civics in Civics education is conducive to cultivating talent and advancing social development. The experiment conducted environmental psychology teaching in students' Civics courses, and the empirical study of the data found that the model outperformed the traditional classroom regarding knowledge, ability, innovation, and value across the board, as shown in Figure 4. In the traditional Civics classroom, the overall mean score was 64.42. After using the environmental psychology teaching model, the overall mean score increased to 82.96, with an increase in scores. The average score of innovation increased by 21.76, the average score of knowledge increased by 24.33, the average score of ability increased by 13.03, the average score of value increased by 18.25, and the overall level of students' ideology and politics improved. Through the use of environmental psychology teaching in the Civic Science classroom, it was found that students' knowledge mastery significantly improved, and their learning ability and attitude were more significantly enhanced and improved. Based on this, this paper takes the teaching effect of environmental psychology as the main basis to promote the integration of ideological and political education and student management, to cultivate comprehensive talents as the main purpose, and to provide better character education and good environmental mirror for the future development of students.



**Figure 4** Mean score of the factor of ideological education

#### 4 Conclusion

Based on the constructed model of environmental psychology in college student management and ideological and political education, this paper uses the CIPP evaluation mechanism to evaluate the feasibility and effectiveness of teaching environmental psychology in ideological and political education. The following conclusions are drawn:

- 1) The experiment monitored the classroom situation of ideological and political education in real-time, and the student's classroom head-up rate was significantly higher in the environmental psychology teaching model than in the traditional classroom. This proves that ideological and political education teaching can use the environmental psychology teaching model.
- 2) The application of the environmental psychology teaching model to the ideological and political education of college students has achieved certain results. The average score of students' ideological and political factors increased from 64.42 to 82.96. The environmental psychology teaching model can improve students' ideological and political levels significantly, play an effective role in cultivating talents in colleges and universities, and cultivate more comprehensive talents for the country.

It can be seen that the environmental psychology teaching model is applied to the ideological and political teaching process of college students through the study of the development of college student management and ideological and political education in the context of environmental psychology. In this paper, we deeply analyze various aspects of student management, excavate the ideological and political elements, and conduct innovative research on the way of integrating both, etc., to integrate the ideological political elements without traces and finally realize the educational goal of cultivating professional talents in colleges and universities.

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