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Research on the construction of accurate path of Marxist education communication in new media environment based on deep learning modeling

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ABSTRACT

Under the support of education digitalization strategy, in order to adapt to the development needs of education modernization, it is necessary to strengthen the research on the application of artificial intelligence technology in the main education of Marxism. Based on this, this paper closely follows the background of the artificial intelligence era, takes Marxist theory as a guide, and builds an intelligent communication platform for Marxist education based on the deep reinforcement learning model and the new media platform, which serves as a key link in the precise communication path of Marxist education. Relying on the state representation model and decision-making model in the deep reinforcement learning algorithm, the platform realizes the intelligent recommendation and dissemination of Marxist education content. The results of the precise communication path show that the intelligent communication platform has good application recognition and perceived satisfaction, and the audience students have a strong sense of belonging and responsibility for Marxist education in the communication, and the average score of the survey on the cultivation of values such as life ideals and political attitudes is above 4.50 points. The precise communication path of Marxist education proposed in this study, as an implementable countermeasure in the new media environment, can help the audience students to establish a correct worldview, life view and values.

Keywords: deep reinforcement learning; state representation model; decision model; Marxist education; dissemination path

1. Introduction

The dissemination position of Marxist theory is mainly in colleges and universities. In recent years, the state has attached increasing importance to ideological and political education in colleges and universities, and has introduced a series of strategic programs to strengthen ideological and political education in colleges and universities [1-2]. The spread of Marxism in colleges and universities is an

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important driving force for Marxism to remain at the forefront of the times. Colleges and universities bear the fundamental task of establishing morality and educating people, and also play important functions such as scientific research, cultural inheritance and social service. Therefore, the spread of Marxism is closely related to the full play of the functions of colleges and universities, which is the "leading project", "soul casting project", and "system engineering" in the practice of cultivating morality and cultivating people [3-6].

Under the background of the rise of new media, standing at the historical intersection of the “two hundred years” goals, the dissemination of Marxism in universities has ushered in a historical stage in which the period of golden opportunity and the period of major challenges are superimposed, and it is necessary to summarize the experience, sort out the problems, and plan the path in a timely manner, in order to better serve the comprehensive construction of a modern socialist country [7-8]. In the era of rapid technological development, the ways and means of communication have changed greatly, and the emergence of new media has provided a new platform for the dissemination of information [9].

With the continuous development and extension of the new media communication methods, the impact on society has become more and more far-reaching. New media not only deepen our understanding of the world, but also subtly influence our ideology and the way of information dissemination [10-11]. Colleges and universities, as the main position of Marxist communication, the communication methods and channels have also changed under the influence of new media [12], so the study of Marxist communication in colleges and universities under the vision of new media responds to the needs of the development of the times.

Szadkowski, K et al. analyze the university crisis based on the concept of internal and external oppositions of Marxist theory, aiming to uncover what lies beyond the form of higher education [13]. Hall, R dialectically contrasts and analyzes the autonomist perspective with the Marxian traditionalist perspective, explaining the logic by which the qualificationist perspective can be used in the critical readings of ICTs [14]. Hill, D dissects the the goals and educational optimization that Marxist education needs to achieve in each social class, and explored and thought about it from the dimensions of pedagogy, curriculum, classroom resistance and implicit curriculum [15]. Liu, Y et al. explored the reform and innovation strategies of ideological education in the context of the new media in order to disseminate the positive energy and make a positive contribution to the cultivation of students' good morals [16]. Xuduo, Z elaborated on the May 4th period the spread of Marxism is highly dependent on the social and cultural class, and the form of flow is top-down, and the cultural class in the transformation of revolutionaries, this authority in the gradual disappearance [17].

This paper proposes the basic rationale of the precise communication path of Marxist education by using artificial intelligence and new media platform as the driving technology and the main communication channel respectively. Combined with the demand of the communication path, based on the architecture of the learning knowledge cloud platform, the intelligent communication platform of Marxist education is constructed by carrying the deep reinforcement learning model. The state representation model in the deep reinforcement learning model is used to convert the recommendation interaction data in the intelligent dissemination platform into vector representation, and the reward value is mapped into a unified vector through one-hot coding, so as to realize the intelligent recommendation of Marxist education content based on the output results of the vector. The decision model is then used to improve the coverage and accuracy of the recommended content to realize the intelligent dissemination of Marxist education. After analyzing the effectiveness of the key technologies in the intelligent communication platform and the satisfaction of the platform application, this study explores the effect of Marxist education communication under the support of the platform's practical application, and analyzes the practical effect of the precise communication path of Marxist education.

2. Method

2.1. Design of precise communication path for Marxist education

2.1.1. Basic rationale for communication paths. The so-called intelligent communication refers to a new type of communication mode that applies artificial intelligence technology with self-learning ability to the production and circulation of information, which can occur in all aspects of content production, distribution and use. Based on the evolution of communication technology in the new media environment, artificial intelligence reshapes the communication pattern of Marxist education in colleges and universities, promotes the reorganization of the relationship between educators, educated people, media platforms, and information content, and forms the intelligent communication path of Marxist education in colleges and universities based on big data and algorithms, and the specific structure of the communication path is shown in Figure 1. The intelligent communication model of Marxist education emphasizes data as the driving force, and systematically analyzes each specific communication link in the form of graphs to grasp the interactions between various elements. First, educators screen the authenticity of massive information in accordance with the educational requirements of the state and society, combined with the developmental needs of young students in colleges and universities, and decode, decode and encode Marxist education content such as socialist core values and mainstream ideological information to form different information samples such as pictures, videos and texts. Secondly, specific communication channels are selected to deliver the transcoded Marxist education content to young students in colleges and universities. Once again, young students in colleges and universities decode the content on the basis of their own cognitive level and cognitive structure, form their knowledge and understanding, and internalize it in their minds. Finally, based on the feedback from young college students, educators adjust the content, mode and means of education to further optimize the communication strategy. Simply put, in this model, big data and algorithms become the important technical support for accurate and intelligent communication, and young students in colleges and universities use smart devices to communicate and interact on the cloud-based learning platform, forming data action trajectories. Marxist educators use big data technology to analyze and process students' behavioral data, monitor the learning situation in real time, build a model of the education object, and then code and transmit the content of university Marxist education to students according to their developmental needs, in order to realize the personalization and precision of the dissemination of university Marxist education. Meanwhile, the intelligent algorithm can intelligently distribute the content according to the students' data trajectory by associating, filtering, classifying, and labeling the massive data.

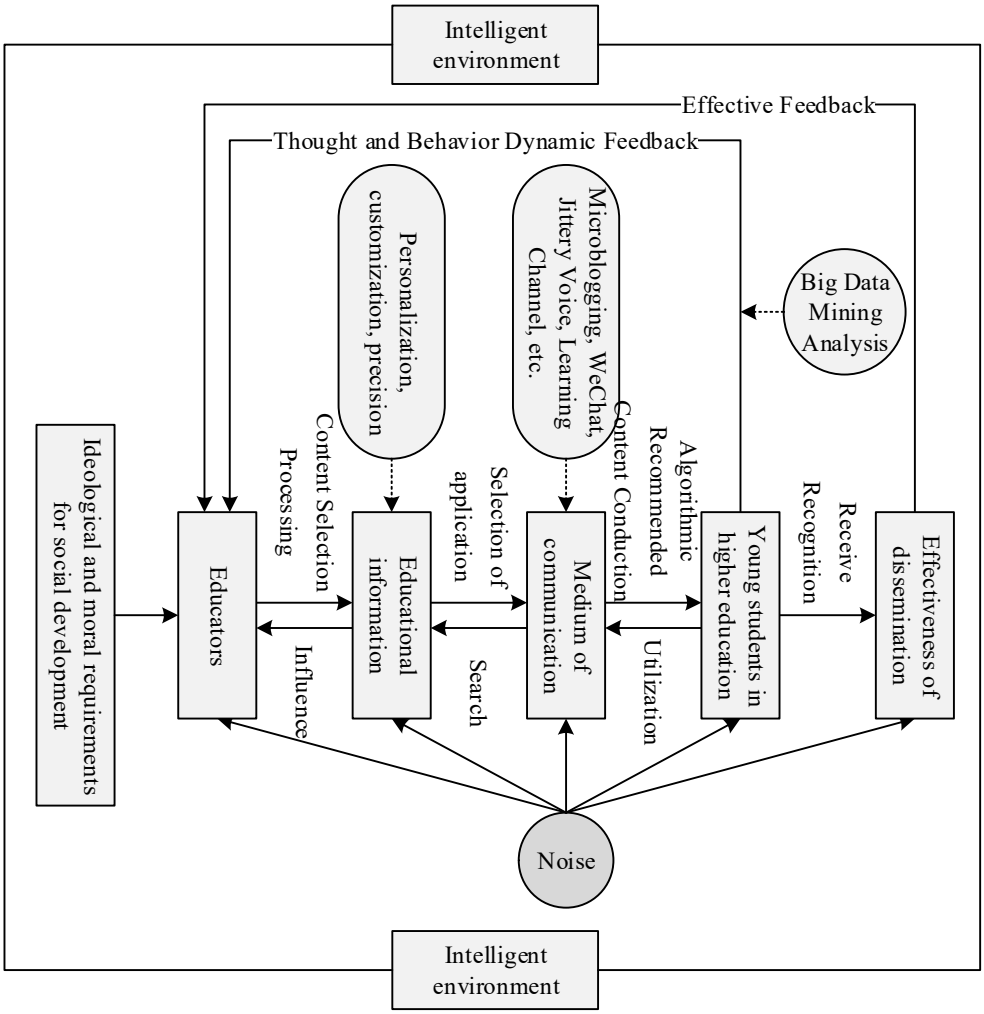


Fig. 1. Intelligent propagation model based on large Numbers

2.1.2. Marxist Education Intelligent Communication Platform Construction. The dissemination object, dissemination content, dissemination mode and dissemination effect of Marxist education in colleges and universities have all been incorporated into the framework of intelligent technology, shaping a new mode of dissemination and fundamentally changing the operation of the dissemination mode of Marxist education in colleges and universities. This paper builds a Marxist education intelligent communication platform architecture based on a learning knowledge cloud platform as shown in Figure 2, which is supported by natural language processing technology, intelligent algorithms, and big data, and builds a new ideological and theoretical learning and practicing platform in the way of intelligent Q&A. First, in the construction of the platform, Xinhua News Agency, colleges and universities and other types of subjects collaborate to build a content-rich intelligent platform, docking the municipal and county-level fusion media centers for the dissemination of content. Secondly, in terms of content production, it combines the Marxist theory research results of many academic institutions to create different types of knowledge base, with authoritative advantages in content. It can be seen that the intelligent technology has datafied the information and precise the dissemination process, restructured the relationship between human beings, the new media intelligent platform, and the information of Marxist education, and dramatically improved the efficiency of the dissemination of Marxist education. Specifically, the overall operation of the communication model of Marxist education in the age of artificial intelligence mainly includes four stages: determination of educational content, dissemination of educational content, acceptance by the

audience, and information feedback, which together constitute a complete communication process, and the traces of technology are always present throughout the entire communication process.

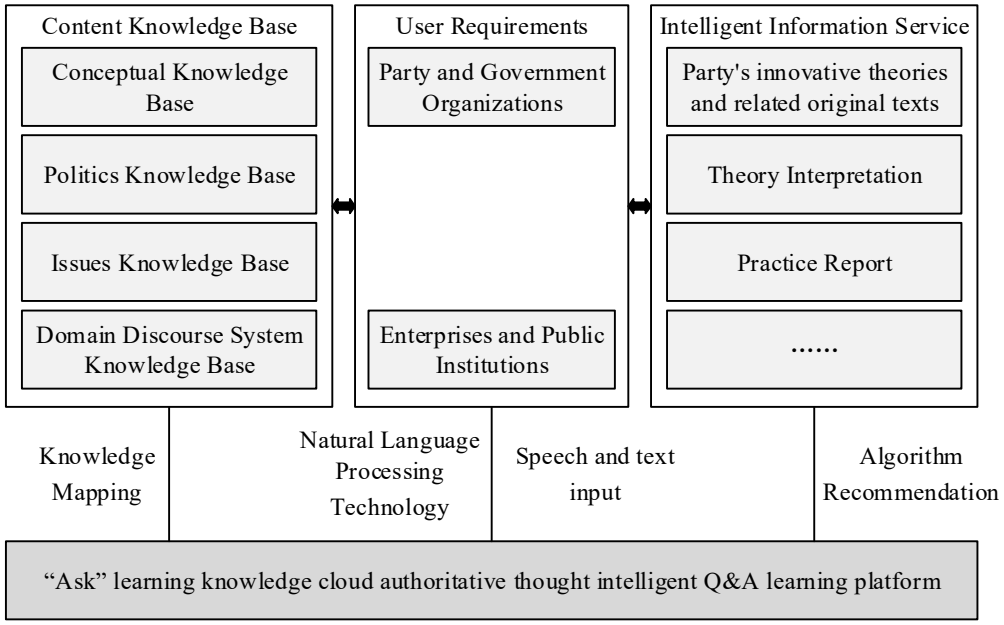


Fig. 2. Marxist education communication platform architecture

2.2. Deep learning based recommendation algorithms

On the application of technology in the above proposed Marxist education dissemination platform, intelligent algorithms (deep learning models) are used to assist the dissemination and learning practice of Marxist education. The platform will rely on the deep learning model to push the theoretical knowledge points involved in the user's behavior or questions posed, etc., and can give accurate recommended Marxist education content information for any questions that the user expresses vaguely.

2.2.1. State representation model design. The state representation model designed in this paper [18] consists of a data preprocessing layer, an action embedding layer, a reward coding layer and a recurrent neural network. The state representation model takes interaction sequence $A_0, R_0, A_1, R_1, \ldots A_{t-1}, R_{t-1}$ as input and a fixed-length vector S_t as output, which serves to compute the state representation vector S_t of the environment at moment t based on the interaction records of the user with the recommender system before moment $t-1$.

The input interaction sequences will first go through data preprocessing, in which the action records and reward records are separated to form action sequence $A_0, A_1, \ldots A_{t-1}$ and reward sequence $R_0, R_1, \ldots R_{t-1}$, and then the action sequences and reward sequences will be inputted to the action embedding layer and reward coding layer respectively, which are used to convert the action and reward information into vector representations respectively. The action embedding layer converts the recommended actions selected by the intelligent body during the interaction into vector representations to capture the semantics and relevance of the actions. The reward embedding layer converts the feedback rewards made by the user during the interaction into a vector representation to reflect the importance and value of the rewards.

The action embedding layer maps each recommended action to an k-dimensional vector in the embedding space, which is realized as shown in Equation (1):

$$E\left(A_i\right) = E_{k \times numm\_items} \cdot O_{A_i}, i \in \left[0, num\_items\right] \tag{1}$$

Where O_A is a one-dimensional vector of length num_items, the element at position A_i^{th} inside it is 1, and the rest of the elements are 0.

The reward coding layer chooses one-hot coding [19] to map the reward values into l-dimensional vectors of uniform length, which is realized as shown in Equation (2):

$$E(R_i) = onehot\left(l - floor\left(\frac{l*(b-r)}{b-a}\right), l\right)$$
$$i \in [0, num\_rewards] \tag{2}$$

where l is the encoded dimension and also the length of the output vector, $floor(x)$ serves to round x down to the largest integer whose result is not greater than x, $(a,b]$ is the range of values for reward R, and for the l-dimensional vector output by $onehot(i,l)$, where the value of the position of i^{th} is 1, and the rest of the positions are 0.

The interaction sequence is pre-processed, action embedded and reward encoded and passed into the recurrent neural network for modeling the temporal relationships of the sequence data. The recurrent neural network takes action embedding vectors and reward embedding vectors as inputs and updates the hidden layer nodes through parameter sharing to capture the temporal dependencies in the sequence data. The recurrent neural network used in the state representation model in this paper contains t hidden layer neuron nodes corresponding to the t interaction data input to the state representation model at $t-1$ time steps, and its computational structure is shown in Equation (3):

$$\begin{aligned} h_1 &= \tanh\left(W\left[h_0, E_{A_0}, E_{R_0}\right] + b\right) \\ h_2 &= \tanh\left(W\left[h_1, E_{A_1}, E_{R_1}\right] + b\right) \\ &\cdots \\ S_t = h_t &= \tanh\left(W\left[h_{t-1}, E_{A_{t-1}}, E_{R_{t-1}}\right] + b\right) \end{aligned} \tag{3}$$

where t is the time step of the interaction sequence, $\tanh(x)$ is the hyperbolic tangent activation function that maps the input values between -1 and 1, W is the hidden layer node weights, and b is the bias term. Each computational node of the hidden layer receives data inputs from the action embedding layer, the reward coding layer and the previous node at the same time, taking the t th hidden layer node as an example, its inputs are the action vector E_A, the reward vector E_R, and the shared parameter h_{t-1} from the previous hidden layer node, and finally the recurrent neural network outputs a vector representation of the current environment state, which contains the state information and the context in the interaction record.

2.2.2. Decision modeling. In order to achieve personalized recommendation while making the recommendation results have a certain degree of random perturbation, the decision model designed in this paper does not directly generate specific recommended content, but calculates the sampling probability of recommendation corresponding to each action in the current action space. Subsequently, based on the sampling probability output from the decision model, the recommended actions in the action space can be selected for random sampling, to obtain a candidate content list of length k, and finally after sorting and screening to obtain the final recommended content.

The decision model [20] learns and optimizes the recommendation strategy by obtaining reward feedback through interaction with the user, and the recommended actions of the intelligent body provide the reference. At the moment t, the interaction sequence goes through the state representation model to obtain the current environment state S_t, after which the probability corresponding to the execution of the recommended actions will be calculated by two fully connected layers.

The first fully connected layer contains the number of nodes equal to the number of recommendable contents, and the preference vector h_t of candidate recommended contents can be calculated based on the input S_t. The principle of implementation is shown in Equation (4):

$$h_t = \Theta_{num\_items} \cdot S_t \tag{4}$$

where Θ is the weight matrix, d is the length of the environment state representation vector S_t, and the element in h_t represents the preference value of the intelligent body to select the educational content in the current state S_t.

The second fully connected layer is the soft-max activation function, which is responsible for mapping the previously obtained educational content preference vector h_t to action probability P_t, and its realization principle is shown in Equation (5):

$$P_t = \frac{e^{h_i}}{\sum_{i=1}^{num\_items} e^{h_1}}, i \in [1, num\_items] \tag{5}$$

Actor-Critic [21] is an important learning method in the field of reinforcement learning, which combines value-based and policy-based methods with a view to maximizing the cumulative rewards, compared to the round updating mechanism of the REINFORCE method, Actor-Critic can perform a single-step updating, which improves the learning efficiency, and the steps of its loss function and parameter updating are as follows shown in Equation (6):

$$\begin{aligned} \theta_{t+1} &\leftarrow \theta_t + \alpha\left(R_t + \gamma\hat{v}_w\left(S_{t+1}\right) - \hat{v}_w\left(S_t\right)\right)\nabla_\theta \ln \pi_\theta\left(S_t, A_t\right) \\ w_{t+1} &\leftarrow w_t + \beta\left(R_t + \gamma\hat{v}_w\left(S_{t+1}\right) - \hat{v}_w\left(S_t\right)\right)\nabla_w \hat{v}_w\left(S_t\right) \end{aligned} \tag{6}$$

where π is the current policy network of the intelligent body, $\hat{v}$ is the predicted state value in the current S_t environment state, and R_t is the reward obtained by the intelligent body in the interaction sequence.

In deep reinforcement learning models, the intelligent body usually needs to choose between immediate rewards and future rewards, and the higher the weight of immediate rewards, the more conservative the intelligent body's action strategy tends to be. For the recommendation task in this paper, it is hoped to make the intelligent body's recommendation results cover as much potentially valuable Marxist education-related recommended content as possible, so this paper adds a dynamic constraint term to the loss function of the algorithm based on the method of model entropy [22], as shown in Eq:

$$\begin{aligned} \theta_{t+1} \leftarrow \theta_t + \alpha\Big(&\left(R_t + \gamma\hat{v}_w\left(S_{t+1}\right) - \hat{v}_w\left(S_t\right)\right)\nabla_\theta \ln \pi_\theta\left(S_t, A_t\right) \\ &-ef\sum_i^{|A|}\nabla_\theta\left(\pi_\theta\left(A_i, S_t\right)\ln \pi_\theta\left(A_i, S_t\right)\right)\Big) \end{aligned} \tag{7}$$

where $\pi_\theta\left(S_t, A_t\right)$ represents the probability of taking action A_t in state S_t, ∇_θ represents the gradient of the constraint term with respect to θ, and ef is the weight coefficient.

3. Results and discussion

3.1. Analysis of Usability and Acceptance of Intelligent Communication Platforms

3.1.1. Deep Learning Recommendation Algorithm Accuracy Testing:

1) Dataset construction. In the experimental verification part of the platform recommendation algorithm, two real datasets from MOOC platforms are selected, one is the "Thought politics" dataset

and the other is the "Marxism education" dataset. The Thought politics dataset contains 284,568 pieces of data from 14,256 learners for 54 courses.The Marxism dataset contains 485,264 pieces of data from 15,263 users for 48 courses. Both datasets contain learner-related attribute information (e.g., identity type, industry, etc.) and course-related attributes (classification, instructor, school, etc.). In both datasets, a ratio of 8, 1, 1 was used to set up the training data, validation data and test data. All experiments were repeated five times and the average results were calculated as the final results of the experiments.

2) Comparison of algorithms. In order to verify the effectiveness of the deep reinforcement learning model, this paper selects some representative algorithms to complete the performance comparison with the deep reinforcement learning algorithms, which are the recommendation methods using only interaction graphs, BPRMF based on matrix decomposition, and LightGCN based on graphs.The recommendation methods using social networks, Hell-TrustSVD and SRGRA. And recommendation methods based on comparative learning, SGL, SEPT and NCL.

3) Evaluation metrics. The experiments are conducted for the top K recommendation (Top-K) scenario. To evaluate the performance of deep reinforcement learning algorithms, two widely used metrics $Recall@K$ and $NDCG@K$ are used to evaluate the performance of all recommendation algorithms. The formulas for $Recall@K$ and $NDCG@K$ are as follows:

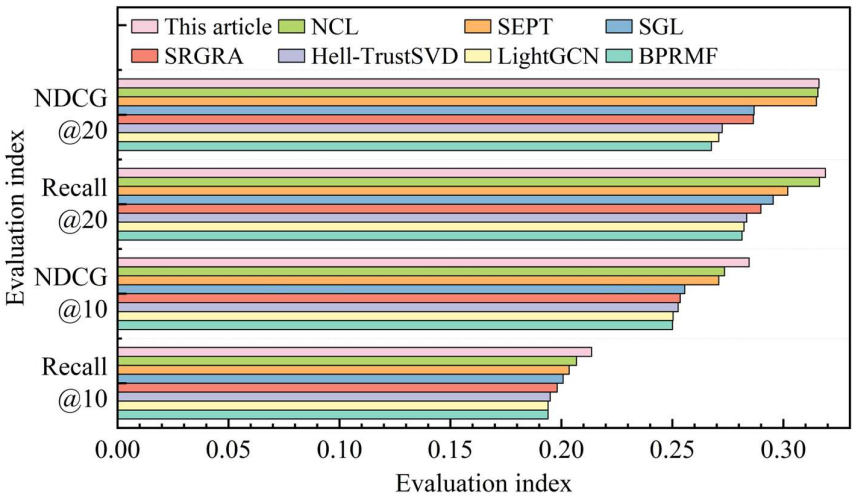
$$\mathrm{Re}call@K = \frac{1}{|U|}\sum_{u\in U}\frac{|R(u)\cap T(u)|}{|T(u)|} \tag{8}$$

$$NDCG@K = \frac{1}{|U|}\sum_{u\in U}\frac{DCG@K}{DCG@K} \tag{9}$$

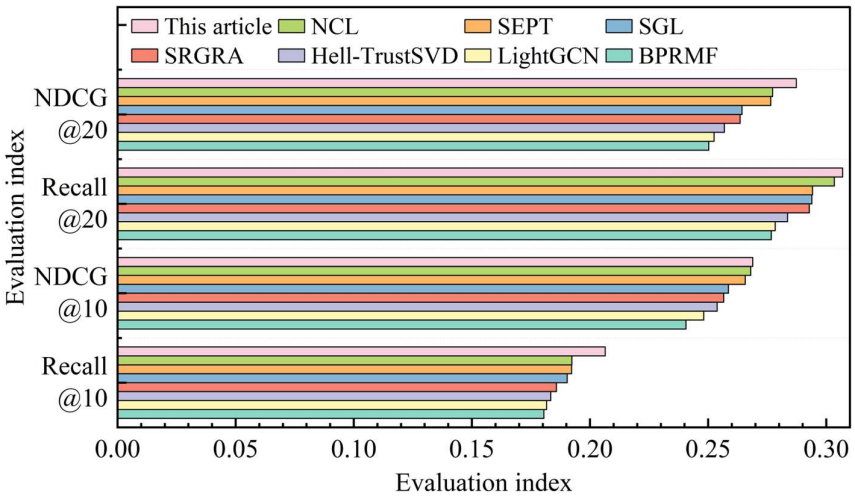
where K is the length of the recommendation list and U denotes the set of learners. $R(u)$ and $T(u)$ are the number of samples that are predicted to be positive and the number of samples that are actually positive, respectively. $Recall@K$ measures the percentage of recalled courses in the Top-K ranked list, and $NDCG@K$ further assigns higher scores to the top-ranked courses, which are set to $K=10$ and $K=20$ in the experiment, respectively.

4) Overall performance comparison. The results of the performance comparison between the deep reinforcement learning algorithms and the comparison algorithms are shown in Fig. 3, (a) and (b) show the analysis results in the datasets Thought politics and Marxism, respectively. In the algorithm based on interaction ratings only, LightGCN outperforms BPRMF on both datasets, which suggests that GCN-based methods encode higher-order information from two-part graphs into embedded representations with better performance than traditional methods based on matrix decomposition.Both Hell-TrustSVD and SRGRA assist in recommendation by constructing implicit relationships. Compared to Hell-TrustSVD, which extracts social relations from learner-course ratings, SRGRA introduces more heterogeneous information such as learners' social networks and external attributes in calculating learner similarity, and thus performs better. The deep reinforcement learning proposed in this paper outperforms all comparative algorithms. Compared with the second-best NCL algorithm, the Recall@10 on the Thought politics and Marxism datasets are increased by 0.68% and 1.41%, respectively, and the NDCG@10 is increased by 1.11% and 0.09%, respectively. In addition, the deep reinforcement learning approach produced more improvements on the small dataset Thought politics, which may be due to the fact that the interaction data of the small dataset is more sparse and does not have enough information to comprehensively portray the learner preferences, whereas deep reinforcement learning provides a more comprehensive exploration of the implicit relationship between the learner and the educational resources, and is able to utilize the limited information more

efficiently to improve the recommendation performance of communication content in Marxist education.



(a) Thought politics



(b) Marxism

Fig. 3. The proposed algorithm performance comparison results

3.1.2. Analysis of audience satisfaction with use. In order to explore the application feasibility and use satisfaction of the intelligent communication platform for Marxist education constructed based on deep learning model and new media platform, this paper randomly selects 154 audiences (e.g., teachers and students of Marxist education, etc.) in colleges and universities in J province to conduct a survey and analysis. Taking the technology acceptance model and user stickiness as supporting theories, a Likert 5-level scale was designed as a questionnaire from content quality, personalization, socialization, perceived ease of use, perceived usefulness, and satisfaction, respectively, to explore the audience's satisfaction with the recommendation technology and other technologies in the intelligent communication platform for Marxist education, and to lay a data foundation for the subsequent application and promotion of the communication platform. The results of the analysis of perceived satisfaction with the use of the Marxist education communication platform are shown in Figure 4, where S1-S6 represent content quality, personalization, socialization, perceived ease of use, perceived usefulness, and satisfaction, respectively. From the mean value of the survey of each dimension, the personalization (4.69 points) and perceived ease of use (4.74 points) of the Marxist education

dissemination platform are rated high. Personalization is a concrete concept of the service quality of the communication platform, and the surveyed audience believes that they are able to see the learning resources of Marxist education they are interested in through active search and personalized recommendation on the communication platform, and they also say that the platform is relatively simple to operate, and that their willingness to use the platform is stronger under the current Internet era that pays attention to the user experience. In terms of satisfaction with the use of the platform, the average value of user experience is 4.47 points, which indicates that the usability and satisfaction of the Marxist education dissemination platform have been verified.

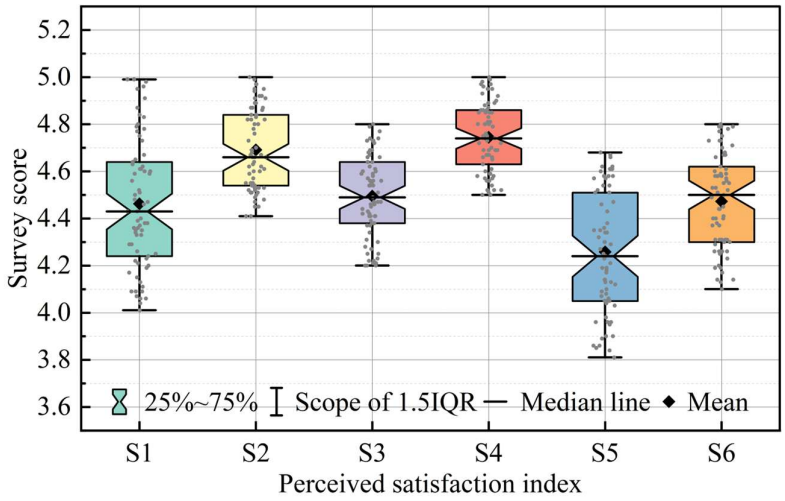


Fig. 4. Communication platform usage satisfaction analysis

3.2. Analysis of the Effectiveness of Marxist Education Communication

3.2.1. Dissemination of sample audiences. The purpose of this paper is to analyze the effect of the influence of the application of Marxist education communication platform in the new media environment based on deep reinforcement learning model on the students in colleges and universities through the questionnaire survey, and to provide a relevant basis for further research. A total of 650 questionnaires were distributed in colleges and universities in J province, 587 were recovered, 587 were valid questionnaires, the questionnaire recovery rate was 90.30%, and the valid questionnaire rate was 100%. The respondents were mainly specialized, undergraduate and postgraduate students, and the questionnaire was used to understand their personal background and Marxist education in the communication environment applied by the Marxist education and communication platform. The main information of the respondents is shown in Table 1, and in terms of gender, male and female students accounted for 45.83% and 54.17% respectively. As for education, it mainly includes specialist, undergraduate and postgraduate students, each accounting for 31.86%, 45.14% and 23.00%. The survey sample with political profile of the masses accounted for 22% of the total sample size, with 106 and 459 CPC members (including CPC reserve members) and Komsomol members respectively. The survey questionnaire object covers a wide range, through the comprehensive research on the work of Marxist education for college students, to provide a better empirical study of the effect of the application of Marxist education and communication platform for colleges and universities in the new media environment.

Table 1. Basic Information of the interviewed college students

Categories		Frequency	Percentage	Cumulative percentage
Gender	Male	269	45.83%	45.83%
	Female	318	54.17%	100.00%

Educational background	Specialty	187	31.86%	31.86%
	Undergraduates	265	45.14%	77.00%
	Graduate student	135	23.00%	100.00%
Professional category	Literary history	118	20.10%	20.10%
	Technologists	129	21.98%	42.08%
	Technologists	96	16.35%	58.43%
	Stage class	85	14.48%	72.91%
	Other classes	159	27.09%	100.00%
Political appearance	Party member	106	18.06%	18.06%
	League member	459	78.19%	96.25%
	Masses	22	3.75%	100.00%

3.2.2. Analysis of Audience Thought and Emotional Cognition Performance. In the analysis of the effect of Marxist education communication, this study is based on the perspective of dissemination and acceptance to analyze the impact of Marxist education communication platform on the ideological awareness and other effects on the audience (i.e. students) after its application, and the investigation includes 2 parts, namely, college students' cognition of Marxist ideology, emotion, and growth and value cultivation.

1) Effect of Improving Ideological Awareness. From the perspective of Marxist education dissemination and acceptance, the enhancement of students' Marxist ideological cognition is not just a superficial acquisition and understanding of knowledge, but rather an in-depth comprehension of the core knowledge in Marxist education and a grasp of the essence of Marxist theory, which in turn enhances political awareness and ideological cognitive satisfaction. This can further be transformed into students' thinking about life, prompting learning progress within the school and laying a good foundation for future development. The analysis of the effect of improving the ideological awareness of the student audience is shown in Figure 5, where A1-A4 indicate the core knowledge of Marxist education, political comprehension, life thinking and academic progress respectively. The questionnaire survey shows that most of the students indicated that they already had a deeper understanding of the knowledge of Marxist education (4.51 points). And the mean scores on the subsequent political comprehension ability, Marxist state of mind, and academic progress in Marxist education also ranged from 4.34 to 4.75. Thus, the application of the Marxist education communication platform not only helps the audience to master theoretical knowledge, but also has a driving effect on the subsequent improvement of comprehension ability, state of mind, and academics.

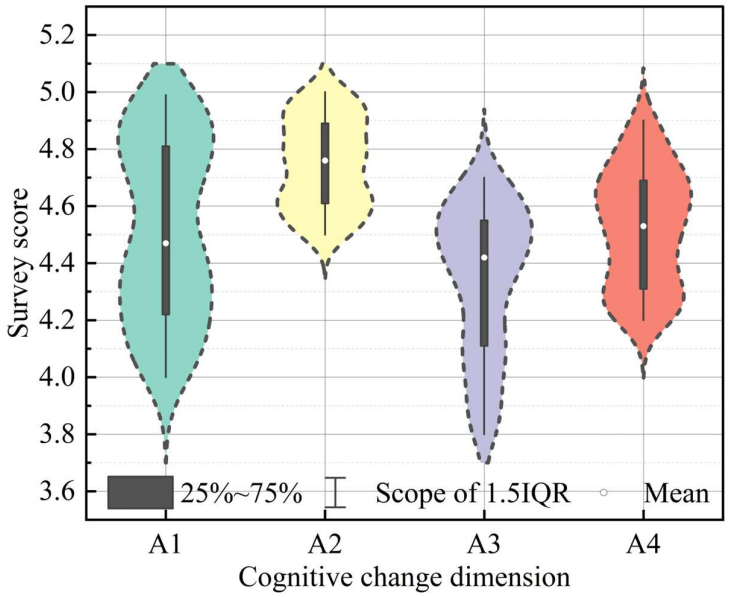


Fig. 5. Specific analysis of cognitive change

2) Analysis of emotional sublimation effect. The results of the analysis of the emotional sublimation effect of the survey audience are shown in Table 2, where the students' emotional acceptance shows a progressive trend, and it is found that the students' identification with the communication path tends to come from the communication content (4.59 points), the communication method (4.43 points), the communication technology (4.78 points), and the good interactions with the audience in the intelligent communication platform. When the Marxist education communication platform can pay attention to the personality development of the audience, the audience students are more likely to identify with and be satisfied with the communication of Marxist education, thus creating a strong sense of belonging and responsibility for Marxist education. The audience students in Marxist education communication also have a higher degree of participation (4.20 points) in Marxist education when they agree with the content of the communication and so on, showing a strong phenomenon of curiosity.

Table 2. Analysis of affective identification

Dimension	Mean	SD	Min	Max
Identity propagation content	4.59	1.35	3.88	5.00
Identity propagation mode	4.43	1.11	3.46	4.91
Identity communication technology	4.78	1.35	3.59	5.00
High ginseng degree	4.20	1.16	3.29	4.98

3.2.3. Results of the analysis of students' values development:

1) Effectiveness of growth cultivation. Marx once pointed out that an individual's motivation for action must first be transformed into internal growth motivation through the deep consideration of his or her mind before it can drive his or her action. In the dissemination of Marxist education in the new media environment, it is committed to the growth of students, and by guiding them to study the Marxist education program, it establishes correct ideals and beliefs, and inspires them to strive for them relentlessly. The results of the analysis of the role of student growth and cultivation in the dissemination effect are shown in Table 3, which shows that the process of intelligent dissemination of Marxist education has made college students generally have patriotic hearts on the path of comprehensive development (4.69 points). At the same time, it should not be overlooked that the

average scores in the six aspects of life ideals (4.74 points), sense of social responsibility (4.61 points), sense of dedication (4.55 points), the national outlook (4.55 points), good moral character (4.64 points), and political attitudes (4.62 points) are all at more than 4.50 points. As a result, students in colleges and universities have established a sense of mission and a spirit of commitment to the times through the effective dissemination of Marxist education in colleges and universities.

Table 3. The effect of growth and culture

Dimension	Mean	SD	Min	Max
Patriotism	4.69	1.30	3.85	4.99
Establish the ideal of life	4.74	1.19	3.82	4.99
National perspective	4.61	1.46	3.90	4.98
Dedication	4.55	1.35	4.33	4.98
National perspective	4.55	1.12	4.25	5.00
Good moral quality	4.64	1.14	4.17	5.00
Political attitude	4.62	1.28	4.30	4.96

2) Cultivation and realization of values. Practice is the key to test the truth, and the value of action far exceeds the empty program. The ultimate goal of Marxist education and communication in the new media environment is to enable audience students to apply it flexibly in practice and guide their behavior. The results of the survey on the cultivation and realization of the values of the audience students after exposure to Marxist education and communication are shown in Figure 6, where B1-B5 represent the realization of one's own values, the application of theories to real life, the association of theories and methods, the ability to study and analyze problems, and the cultivation of practical ability, respectively. The core of Marxist education in colleges and universities lies in deepening the forging of students' practical ability and the cultivation of innovative spirit. The results show that through the intelligent dissemination of Marxist education on the new media platform, the audience of students is not only able to combine theoretical knowledge with practical problems (4.90 points), but also able to improve the ability to solve practical problems (4.55 points). Such a precise communication path aims to make students not only become receivers of Marxist knowledge, but also innovators and practitioners of knowledge.

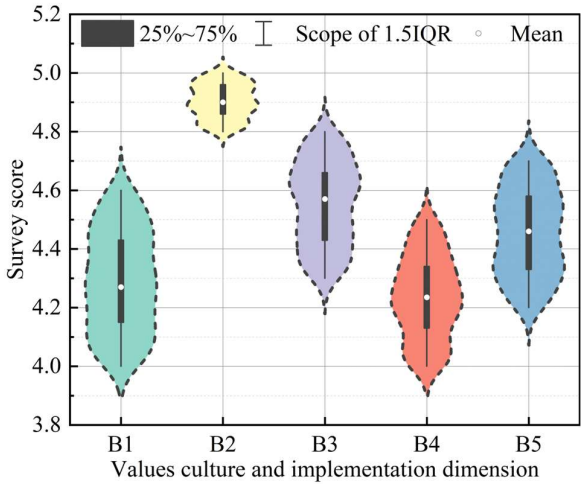


Fig. 6. Values culture and implementation analysis

4. Conclusion

This study builds an intelligent communication platform for Marxist education based on the deep reinforcement learning model and the new media platform, and constructs a precise communication path for Marxist education that covers the dissemination of educational content and the feedback of audience acceptance. After testing, it is found that the performance of the deep reinforcement learning model proposed in this paper as a recommendation technology in the platform is better than that of all comparison algorithms, and the Recall@10 on the Thought politics and Marxism datasets is improved by 0.68% and 1.41%, respectively, compared with the NCL model. And the preliminary application survey found that in terms of satisfaction with the use of the platform, the average value of user experience was 4.47 points, indicating that the usability and satisfaction of the Marxist education and communication platform were recognized. With the practical support of the precise Marxist communication path, most of the students indicated that they already had a deeper understanding of the knowledge of Marxist education (4.51 points) and a strong sense of belonging and responsibility for Marxist education. It was also found that the audience students were not only able to combine theoretical knowledge with practical problems (4.90 points), but also able to improve their ability to solve practical problems (4.55 points).

The practice of this paper shows that the integration path of intelligent technology and Marxist education communication has practical value, and the intelligent communication platform can realize the synergy between the advantages of Marxist education and intelligent technology, and ultimately realize the communication goal of Marxist education to establish morality and nurture people.

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