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Research on the Impact of Deep Learning Supported New Media Cultural Communication Platform on Traditional Cultural Education

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SUMMARY: *This paper investigates a traditional cultural resource recommendation method integrating knowledge graphs and interest preferences. Based on this approach, a new media cultural resource dissemination platform with functions including traditional cultural resource recommendation and user search has been designed. Taking a deep learning-supported new media cultural dissemination platform as the research subject, this study employs questionnaire surveys and mathematical statistical methods to conduct a sample survey across six universities in City A. It quantitatively evaluates the platform's specific impacts on two levels: educational effectiveness and user experience for audiences of traditional cultural education. Findings indicate that the platform's implementation increases audiences' willingness to engage with traditional culture and elevates the proportion of positive emotional responses toward traditional culture. The number of individuals familiar with traditional culture increased by 45.7%, significantly enhancing teachers' and students' understanding of traditional culture, spiritual and cultural cultivation, participation levels, and satisfaction with cultural dissemination. User experience scores across 14 dimension indicators averaged no less than 3.5 points. This shows that the new media cultural dissemination platforms based on deep learning are a good channel through which traditional culture can find its way into the world, which has a positive effect on traditional culture education.*

KEYWORDS: *Knowledge Graph; Deep Learning; New Media Cultural Communication Platform; Traditional Culture Education Effectiveness*

1 Introduction

Due to the accelerated development in internet technologies, internet penetration rates increased over the years. Based on statistics in the Statistical Report on China Internet Development, published by the China Internet Network Information Center, as of 2024, there were 1.108 billion people in China with an internet connection, of which 1.096 billion were mobile internet users [1]. The massive spread of smart mobile devices including smartphones and tablets has changed the traditional way of accessing information, leading to the change of conventional media to the new media. The shift has raised new media to be a buzzword in the modern internet environment, resulting in social networks such as WeChat, Weibo, and Douyin [2-4]. Data on surveys show that by the end of Q4 December 2024, Weibo had 590 million monthly active users (MAUs), WeChat and Weixin had 1.385 billion MAUs, and Douyin had 786 million MAUs. It is illustrated that, due to the ubiquitous use of smartphones, the internet and social media sites, information access, sharing and exchange are now more convenient and efficient

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than ever before, and their coverage is still increasing.

The traditional culture, the essence of the nation's history and wisdom, represents the ethnic identity, value system and spiritual quest [5, 6]. The Chinese nation has developed over five thousand years of civilization, which has nurtured the deep and broad Chinese culture. These are not just the spiritual symbols of the Chinese nation, but also important ties that preserve the ethnic unity and the social peace [7-9]. In the process of rapid Chinese modernization and under the influence of globalization, many of the traditional cultural transmission mechanisms experience limitations based on time, space, and communication channels, failing to satisfy the fast-changing needs of the modern society[10] New media platforms have become important carriers of cultural heritage and education not only changing the way people get information and share thoughts but also offering novel opportunities and challenges in the conservation and renewal of traditional cultural education.

The emergence of new media platforms provides new possibilities for the inheritance and innovation of traditional culture education. On the one hand, new media has a powerful communication ability and artistic presentation ability, which can present the essence of traditional culture in a more vivid and intuitive form to the public, especially the younger generation [11]. Through the new media platform, traditional culture is no longer limited to books and classrooms, but can cross the time and space limitations and be conveyed to the audience in a variety of forms, such as video, audio, pictures and so on. On the other hand, the interactive, participatory and personalized features of new media also provide new ideas for the innovation of traditional culture education [12]. Using the new media platform, educational contents and forms that are more in line with modern learning habits and psychological characteristics can be designed to stimulate learners' interest and enthusiasm in learning, and realize the effective inheritance and innovation of traditional cultural education [13]. However, the rapid development of new media platforms also brings problems such as information overload and cultural homogenization, which makes traditional culture may face the risk of being diluted or even distorted in the process of dissemination [14-17]. Therefore, in-depth analysis of the characteristics and advantages of the new media platform, exploring its impact on traditional culture education, and realizing the effective inheritance and innovation of traditional culture education have become the focus of this paper.

New media technologies have brought unprecedented impacts and challenges to the dissemination of traditional culture, and scholars' research on traditional cultural transmission continues to deepen. Wang, L. examined the influence of new media platforms on the dissemination of traditional costume culture, discovering that dual innovations in the new media environment and information and communication technologies have endowed communication media with a "de-materialized" characteristic. By constructing an organized cultural transmission platform, it aims to provide intelligent, precise information content to maximize the effectiveness of communication functions [18]. Zhou, S and Sun, W examined the impact of new media technology on the dissemination of folk literature within the big data context. They found that big data can analyze key factors influencing the dissemination effectiveness of folk literature, while new media platforms offer timely, flexible, and interactive dissemination models. These platforms will actively encourage participation in the society and increase the spread of folk literature [19]. It is thus evident that modern social media platforms like WeChat, Weibo, and short video are essential tools of dissemination that offer strong technological backing to the conventional cultural transmission and spread its boundaries.

The development of information technology has brought about changes in the era of media transformation and cultural transition where the new media platforms are used as cultural centres that are responsible for conveying information and distributing culture. It highlights the digitalization and informatization of new media cultural diffusion platforms which will

increasingly exert their power. He, L and Niu, J make use of new media platforms such as Douyin to spread traditional Chinese culture, suggesting innovative information dissemination algorithms to increase the relevancy and liveliness of cultural dissemination. These algorithms help the process of inheritance and innovation of traditional culture [20]. Sun, D has done a case study of Xinjiang Uyghur Muqam culture, the changing nature of relationships between new media platforms and traditional culture. The research examined the new ways in which new media platforms alter cultural exchange trends in the post-pandemic world and their potential transformative capability [21]. Liu, Z used the latest technologies such as convolutional neural networks to create a new media platform to spread traditional Chinese culture. The platform showed outstanding accuracy and reliability in diverse testing, with the intention of achieving the digital transmission of traditional cultural inheritance [22].

The current media, which includes Facebook, Twitter, and TikTok, give people access to more dynamic, proactive, and useful cultural information that satisfies their increasing cultural needs, hence fulfilling the objective of cultural dissemination [23]. Information services and cultural dissemination were difficult in the traditional media setting. Nevertheless, the introduction of new information technologies and new media have made it possible to find new avenues of conveying traditional culture. C.B. Huat and S. Jung report that new media technologies have played an important role in the flourishing development of traditional culture due to the hybrid model that integrates both grassroots-driven bottom-up dissemination with traditional top-down models [24]. Chen, S. et al. suggest that the new media technologies present to their users immersive experiences and interactive engagement, and they bring about unparalleled opportunities in the area of traditional cultural dissemination. They suggest that using digital technology, virtual reality and social media will lead to the creation of new exhibition platforms of the Dunhuang mural culture [25]. The authors used mixed methods to examine the posts on the Facebook and Instagram pages of the University of Hong Kong Library and combined them with the interview of campus users. The results showed that users welcomed the fact that the library was making use of these platforms and advised the adoption of highly entertaining and interactive communication strategies that would improve the level of user engagement and cultural dissemination purposes [26]. Besides, Çakmak, T and Eroğlu, Ş explored the posts posted on Facebook official pages. Their analysis of the interactions between the users and the themes of the content classified with the help of the LDA model demonstrated that new media technologies facilitate operational processes related to enhancing cultural dissemination activities and user interaction [27].

The limitation of the conventional cultural education models is to overcome monotony and unappealing nature of the traditional cultural education models, this paper develops a new media culture dissemination platform supported by deep learning. It builds a conventional cultural resource recommendation system based on the short-term and long-term interests of users as well as the knowledge graph as input information. The platform has three main modules including a user module, a traditional cultural resource recommendation module, and a distributed computing logic module. An empirical survey using questionnaires was performed on various aspects such as cognitive gains and spiritual enrichment to determine how the platform specifically influenced traditional cultural education. The results of the user experience of the platform were measured through Likert scales.

2 A Cultural Resource Recommendation Method Integrating Knowledge Graphs and Interest Preferences

2.1 Deep Learning-Based Recommendations

The deep learning models can learn the intricate connections between users and resources and thus can better identify the underlying interest of users. Collaborative filtering systems based on deep learning focus on the ability of users and items representations to learn by integrating neural networks into their structure. The DNN technology allows the training of more advanced user and item representations. A DNN is a neural network design which is a collection of many stacked layers that learn feature representations of inputs by layers extracting higher-order abstract representations of inputs.

A two-stage deep learning integrated recommendation method based on DNN principles first utilizes low-cost autoencoder models to uncover latent factors of users and items. These factors are then combined as input to a deep neural network, achieving rapid and accurate recommendation predictions.

2.2 Knowledge Graph-Based Recommendations

Since knowledge graphs [28] were first proposed, many scholars have begun to actively explore their applications in various fields. Compared with traditional documents, knowledge graphs are presented at a finer entity granularity and contain semantic structural information about entity relationships, which makes them more accurately characterize the relationship between user preferences and items, deeply understand the interconnections between user interests and information, and effectively alleviate the cold-start problem.

2.3 Interest-Based Modeling and Recommendation

Interest preference modeling is a critical task in new media cultural resource dissemination platforms, enabling better capture of user interests and tracking of their evolution. Collaborative filtering methods primarily rely on user-item interaction matrices, lacking deep understanding of user behavior evolution. Novel similarity metrics considering user confidence and temporal context effectively enhance prediction accuracy.

Long Short-Term Memory (LSTM) [29], an enhanced form of Recurrent Neural Networks (RNN), effectively avoids issues such as gradient vanishing and gradient explosion inherent in RNNs. LSTM is employed to separately learn distributed representations of citation contexts and traditional cultural resource texts. Subsequently, the relevance between these two is measured based on the learned distributed representations. Finally, traditional cultural literature and video resources with higher relevance scores are selected for recommendation.

2.4 KGIP Model

This paper proposes a traditional cultural resource recommendation method integrating knowledge graphs and interest preferences. The KGIP model comprises five layers: input layer, embedding layer, fusion layer, serialization layer, and output layer.

The model's input data consists of users' long-term and short-term interests alongside knowledge graphs. Within the embedding layer, long-term and short-term interest behaviors reflect users' explicit or implicit interactions with items, while knowledge graphs provide additional semantic structural information. The fusion layer integrates the embedded representations of long-term/short-term interests and knowledge graphs from the embedding layer, generating latent factor embeddings related to users and items. In the serialization layer,

embedded vectors are passed through an LSTM layer to capture dependencies within user behavior sequences. The output layer employs a fully connected neural network to predict complex interactions between users and items by capturing nonlinear relationships. Using the embeddings generated by the sequence layer, a Multi-Layer Perceptron (MLP) [30] is selected to compute error loss based on predicted outputs versus actual observed data. Training the entire model is achieved through optimization and backpropagation of this loss.

2.4.1 Embedded Modules

This paper adopts the notation where $K=(E,R)$ represents the knowledge graph, E denotes the entity set corresponding to the graph nodes, and R signifies the entity relationship set corresponding to the edges. By employing knowledge graph construction methods, an item association knowledge graph is established. Through entity recognition, relationship extraction, and other techniques, more refined semantic structural information is obtained.

The TransR knowledge graph embedding method is applied for embedding. For triples (h,r,t) in the knowledge graph, e_h , $e_t \in R^d$, and $e_t \in R^k$ serve as the embedded representations for entity nodes and entity relations, respectively. The scoring function is computed as follows:

$$ps(h,r,t) = \| W_r e_h + e_r - W_r e_t \|_2^2 \tag{1}$$

During the training phase, a paired ranking loss approach was employed to perform knowledge graph embedding through a task that distinguishes between genuine and fake triples. The final objective function is:

$$\min \sum_{(h,r,t,t)\in \mathrm{T}} \max(0,\, ps(h,r,t) + \gamma - ps(h,r,t)) \tag{2}$$

The TransR method successfully incorporates the rich semantic structure of knowledge graphs into recommendation models by embedding entities and relationships within the graph, yielding new user and item embedding vectors $\{u_n^k, v_j^k\}$.

The long-term interest vector and short-term interest vector are linearly concatenated to form the user's embedding vector representation U_h, resulting in the final user and item embedding vectors $\{u_n^i, v_j^i\}$. These are subsequently fused with the knowledge graph at the fusion layer.

$$U_h = [U_l; U_s] \tag{3}$$

2.4.2 Fusion Module

Design a dynamic mechanism prior to fusion, incorporating a Unit parameter to determine whether to utilize additional knowledge graph information when concatenating the embedding vectors of User u and Item v. Next, the fusion stage proceeds by linearly concatenating the user's long-term and short-term embedding vectors u_n^i along the specified axis with the knowledge graph user embedding vector u_n^k, forming the new fused user embedding vector u_n^m. The same approach is applied to fuse item embedding vectors v_j^i and v_j^k, yielding the new fused item vector v_j^m.

$$u_n^m = [u_n^i; u_n^k] \tag{4}$$

$$v_j^m = [v_j^i; v_j^k] \tag{5}$$

2.4.3 Serialization Module

To capture the temporal characteristics of users and items and effectively fuse knowledge graph information, this paper employs a Long Short-Term Memory (LSTM) network to perform time series modeling on the fused user embedding vector u_n^m and item embedding vector v_j^m, thereby incorporating information from users' historical behavior sequences. The memory unit stores and retains information, with its updates performed according to the following formula:

$$C_t = f_t \cdot C_{t-1} + i_t \cdot \bar{C}_t \tag{6}$$

The formula for calculating the Forgetfulness Gate is as follows:

$$f_t = \sigma(W_f \cdot [h_{t-1}, x_t] + b_f) \tag{7}$$

The input gate calculation process is as follows:

$$i_t = \sigma(W_i \cdot [h_{t-1}, x_t] + b_i) \tag{8}$$

$$C_t = \tanh(W_c \cdot [h_{t-1}, x_t] + b_c) \tag{9}$$

where o_t determines which part of the information in the storage cell is output and h_t is the final hidden state. The formula is as follows:

$$o_t = \sigma(W_o \cdot [h_{t-1}, x_t] + b_o) \tag{10}$$

$$h_t = o_t \cdot \tanh(C_t) \tag{11}$$

Through tensor expansion operations, the item vector u_n^i from long-term and short-term behaviors is expanded into a 3D tensor, incorporating time-series information t_t. The expanded tensor u_n^i is fed into the LSTM layer. The fused user embedding vector u_n^m and item embedding vector v_j^m are each expanded into 3D tensors and passed to the LSTM layer, yielding corresponding time-series outputs u_n^l, v_j^l. Finally, concatenating v_o^l, u_n^l, v_j^l forms the final time-series sequence y.

$$y = [v_o^l; u_n^l; v_j^l] \tag{12}$$

2.4.4 Multi-Layer Perceptron

By employing a Multi-Layer Perceptron (MLP), this architecture progressively abstracts and maps input features through nonlinear transformations. This enables a more comprehensive capture of the abstract characteristics inherent in the input data.

For each layer i, the fully connected layer performs the following operations:

$$z^{(i)} = W^{(i)} \cdot y + b^{(i)} \tag{13}$$

Next, it passes through the ReLU activation function:

$$y^{(i)} = ReLU(z^{(i)}) \tag{14}$$

The output layer employs a Sigmoid activation function to map the MLF output to the range (0, 1) for probability prediction in binary classification tasks. Here, W_p represents the weight matrix of the output layer, and b_p denotes the bias vector. After completing the forward propagation of the MLP, the final output obtained is:

$$OutPut = Sigmoid(W_p \cdot y + b_p) \tag{15}$$

3 Design of a New Media Cultural Resource Dissemination Platform

3.1 Platform Design

3.1.1 Platform Requirements Analysis

The design of the new media cultural dissemination platform aims to proactively recommend traditional cultural resources that users may find interesting based on their prior access history, thereby helping users better access resources aligned with their interests and promoting the inheritance and preservation of traditional cultural resources. Therefore, this chapter outlines the following requirements for the new media cultural resource dissemination platform, focusing on how to better provide personalized traditional cultural resource recommendation services while preserving and promoting traditional culture:

(1) The traditional cultural resource recommendation and dissemination platform can crawl relevant traditional cultural resources from third-party websites, parse the crawled resources, extract tags, and store them.

(2) As user access logs for traditional cultural resources accumulate over time, the system should periodically update the user resource recommendation lists.

(3) After the recommendation algorithm running on the Hadoop distributed cluster updates the user resource recommendation lists, the system should synchronously store them in the MySQL database. This serves as the basis for the recommendation prototype platform to provide users with personalized traditional cultural resources.

3.1.2 Platform Architecture Design

The design of the new media cultural dissemination platform aims to recommend traditional cultural resources that users may find interesting based on their previous access history when learning about or searching for such resources. The proposed resources are shown to the user interface as they enter the system and therefore help the users to find more about traditional cultural resources of their choice. Accordingly, the platform should contain a data layer to handle user and traditional cultural resource data, a logic layer to evaluate user attributes and perform recommendations, and a presentation layer to present searched and recommended traditional cultural resources. The overall architecture of the platform that integrates Hadoop distributed platform and associated open-source components is shown in Figure 1:

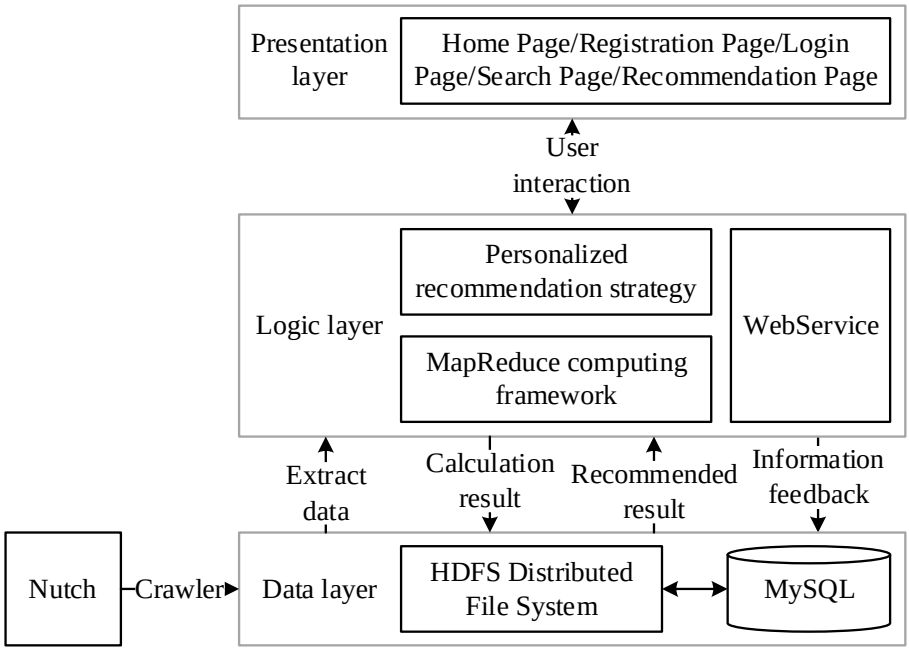

Figure 1: Overall platform Architecture

(1) Data Layer: Data is used as the basis of all the new media cultural dissemination platforms. The data layer mostly contains traditional cultural resources that are crawled over the internet, user information, recommendation outcomes, and user comments about resources.

The main aspects of user information are user ID, name, gender, contact information, and interest profiles. On logging in, personalized results of recommendations based on individual strategies are saved in the database concerning every unique user, which facilitates quick personalized recommendations. Feedback of users is the reflection of their response towards the recommendation system or its results, mainly in the form of resource ratings. This feedback can be used to improve the current recommendation system.

(2) The logical layer: As a part of the whole new media cultural dissemination system, the logical layer controls the recommendation results of the traditional culture resources. Such results are not only determined by recommendation algorithms but also by related rule-based policies. It is then clear that this prototype recommendation system utilizes the algorithms that have been explored in this paper as its central logic layer algorithms.

(3) Presentation Layer: This layer forms the user interface of the platform that shows the search and recommendation results to the users. Main duties of the presentation layer are user registration, login, listing of search and recommendation results, user feedbacks, and ranking lists. The user feedback role mainly records the behavior of the user, which is an important source of fundamental user information on the platform and helps improve the quality of recommendations. Previously-rated resources can be revisited by users and the interest ratings on those resources may be changed.

3.1.3 Platform Functionality Design

According to the general structure of the traditional cultural resources dissemination system, the functional modules of the platform can be classified as indicated in Figure 2: they are classified as the user module, the traditional cultural resources recommendation module, and the distributed computing logic module.

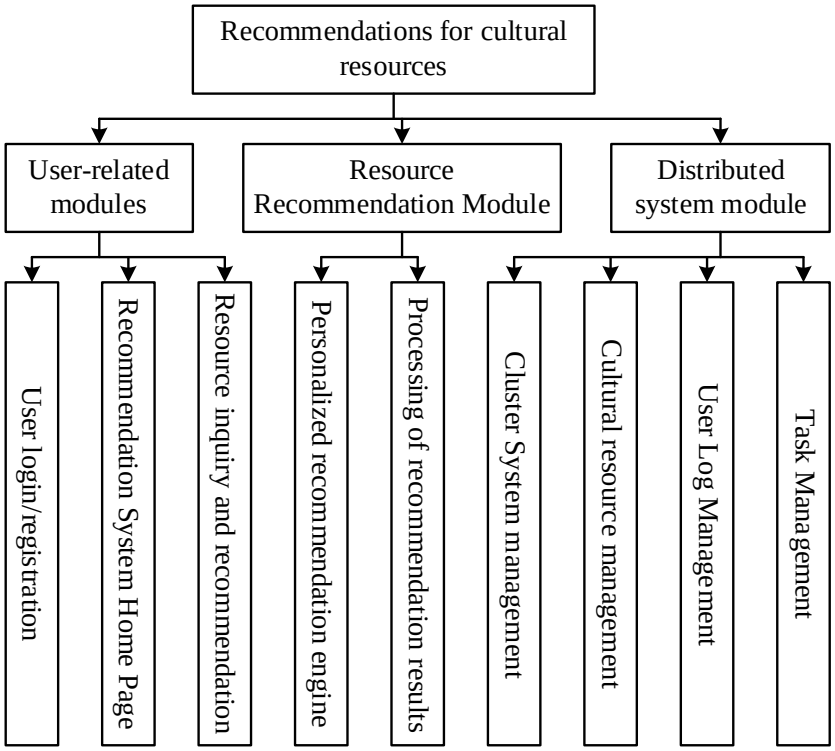

Figure 2: Functional Modules of the platform

3.2 Platform Implementation

3.2.1 Implementation of User Login and Registration

The user login and registration process works as follows: First, it checks whether the user is already registered. If not, the user is prompted to register, fill out the relevant registration information, and select tags of interest. The system then validates the entered information and adds the registration details to the database. If the user is already registered, the username and password entered are verified against the database. Upon successful verification, the user is directed to the platform's homepage.

3.2.2 Implementation of the Platform Homepage

After successful login, users will be directed to the homepage of the New Media Culture Communication Platform. On the platform's homepage, users can search for content of interest using the full-text search engine. They will also see personalized recommendations based on their browsing history, as well as currently trending resources on the platform.

3.2.3 Implementation of Platform Search and Recommendation Results

The platform also recommends relevant resources based on users' historical behavior and their current interests, while displaying trending content on the platform.

The system uses a full-text search engine when users are searching with keywords to locate the most relevant content and present it to the user. At the same time, the system suggests other resources that are personalized based on the previous actions of the user and their latest interests.

On the search page on the platform, there are search results and average ratings of resources displayed to users. The users are allowed to rate resources once they have browsed through the resources.

Also, the system suggests appropriate resources depending on the historical behavior of the user as well as the resources they are currently following, and it displays the trending resources of the platform.

4 Empirical Analysis of Platforms' Impact on Traditional Cultural Education

4.1 Study Population and Methods

The paper investigates cultural dissemination platforms of new media driven by deep learning with six schools as the research participants in City A comprising of 1,000 students and 50 teachers. Under the help and direction of the supervisor, the researcher explored and completed the research questions and objectives. Then, carefully following the primary guidelines of questionnaire design, the student questionnaire entitled Survey on the Effect of New Media Cultural Communication Platform on the Dissemination of Traditional Cultural Education and the teacher questionnaire named Survey on the Effect of New Media Cultural Communication Platform on the Dissemination of Traditional Cultural Education were created.

The initial part of the questionnaire design is gathering basic background data of participants and their initial knowledge about traditional culture that will be used to determine the relevance of other test questions. It is not a central focus but its evaluation is only based on the contextual relevancy. The second section contains survey questions about the effectiveness of traditional cultural education. The third section is about user experience and it uses a Likert scale to measure the perceived experience of the platform. One thousand five hundred questionnaires were handed out and one thousand received back giving a rate of reply of 95.24%.

4.2 Data Analysis of Audience Engagement in Traditional Culture Education

The tags on personal channels represent the overall perceptions of different contextual countries. To explore how audiences interested in traditional cultural education perceive video content pushed by new media cultural dissemination platforms, and to further segment comment texts to understand their perceptions of video content, Figure 3 illustrates the overall perceptions of audiences interested in traditional cultural education.

According to Figure 3, it can be found that the most frequently expressed keywords by the audience of traditional culture education for short video content are "love", "like", "beautiful", etc. The keywords pointed to by the arrows include positive words such as "food", "erhu", "zongzi", and "chopsticks", expressing their love for traditional Chinese cuisine, their passion for traditional household utensils, and their praise for the image of traditional Chinese culture presented in the video.

Analysis of these keywords reveals that audiences for traditional cultural education hold an overall positive attitude toward the content presented in the videos, demonstrating recognition of traditional culture and generating interest. It might be due to the reason that when it comes to food preparation and intangible cultural heritage craft demonstrations, there is little verbal communication and most of the instructions are given by means of easy physical movements. People of other nations can eliminate language barrier and cultural diversity by using body language in order to avoid these problems. Moreover, the procedure steps are shown in detail and physical movements of people are simple and understandable, which attracts the viewer’s attention. It inspires more careful consideration of the details and increases their wish to give these practices a try.

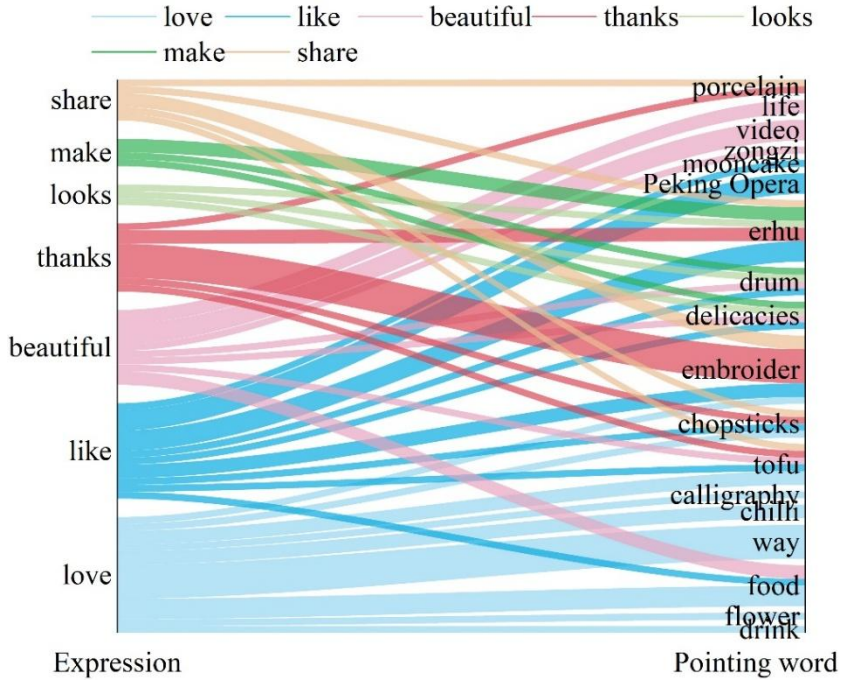

Figure 3: The overall cognition of the traditional culture education audience

As a tool to examine the emotional choices of traditional culture education consumers concerning the suggested traditional cultural materials on some of the recently popularized social media sites, the VADER package in Python was used to determine the overall sentiment score of the comments of sample resource videos. But because of large data volume, it was necessary to apply point density calculation method in order to rank the values and improve visualization. The obtained visualization is presented in Figure 4.

The sentiment index is depicted along the horizontal axis, the comment publishing time is depicted along the vertical axis, and the bar chart on the right shows the density of numbers. According to the Python program configurations, the overall sentiment index of user comments has been configured to be [-1.1]. It can be divided into three emotional states depending on the index value, i.e., positive, neutral, and negative. Scores less than -0.05 mean that there is negative sentiment, which is an indication of audience aversion, dissatisfaction, or criticism of the video. Scores greater than 0.05 mean that there is positive sentiment, which is an indication of audience satisfaction, appreciation or praise. Scores in the range of -0.05 to 0.05 reflect neutral sentiment meaning no clear attitudinal bias. As it is represented in the figure, the dots are scattered throughout the years. The negative sentiment area demonstrates significantly increased density in 2019-2021, which is followed by a positive trend in 2022. The transformation might be caused by the growth of new media cultural platforms in the world between 2022 and 2024, which would allow a massive audience that has been keen on traditional culture education to learn about the Chinese culture through such channels. In general, the positive sentiment area shows more points density, which means that individuals who watch traditional cultural education have a positive attitude towards the traditional culture of China.

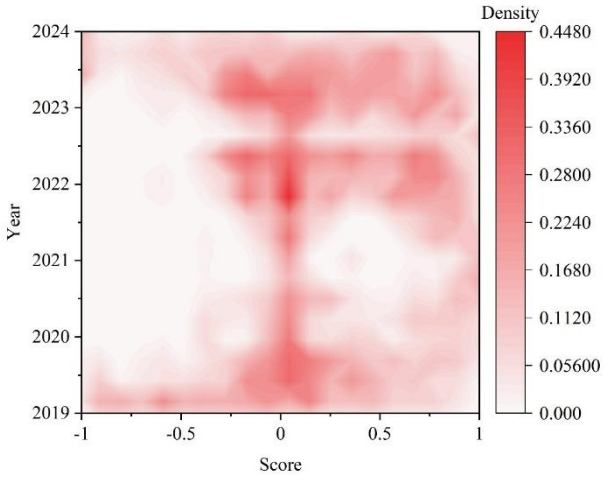

Figure 4: User comments on emotional tendency nuclear density

4.3 Concrete Outcomes of Traditional Culture Education

4.3.1 Impact on the Level of Awareness Among Teachers and Students

The level of understanding of traditional culture among university faculty and students directly influences students' attitudes toward traditional culture and their behaviors in practicing it. Higher levels of understanding are more conducive to the dissemination of traditional culture. A survey was conducted to assess the understanding of traditional culture among university faculty and students. As shown in Figure 5, the survey results indicate that 32.60% of university faculty and students currently have a thorough understanding of traditional culture, while 4.50% hold the attitude of being very unfamiliar with it. This indicates that those with a high level of understanding or some understanding of traditional culture account for 66.7% of the total. Only less than 40% of university faculty and students require improvement in their understanding of traditional culture. Before the implementation of the new media cultural dissemination platform, only 21.0% of faculty and students reported a high level of understanding or some understanding of traditional culture. This demonstrates that the new media cultural dissemination platform, supported by deep learning, effectively enhances faculty and students' understanding of traditional culture and promotes its further dissemination.

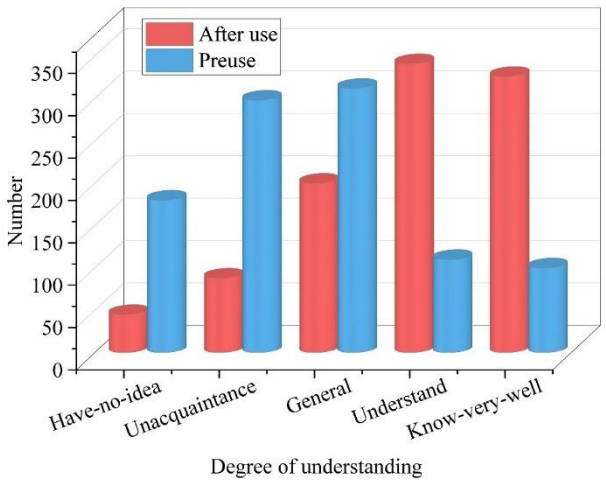

Figure 5: Cognitive results

4.3.2 Impact on the Spiritual and Cultural Life of Faculty and Students

Traditional culture education can subtly influence university faculty and students with the spirit of traditional culture, promoting their healthy development while advancing the dissemination and promotion of traditional cultural values. Table 1 presents statistical results on university faculty and students' perceptions of traditional cultural values, encompassing ten dimensions: benevolence and empathy, righteousness and courage, courtesy and humility, unity of knowledge and action, self-improvement, virtue as the foundation of all things, self-reflection and caution, devotion to family and nation, harmony between humanity and nature, and aesthetic refinement. The survey data in Table 1 indicates that in this investigation of traditional culture dissemination among university students at six institutions in City A using new media cultural platforms, the majority of faculty and students believe that the dissemination of traditional culture through these platforms is most effectively perceived in terms of the spirit of self-reflection and introspection, with 91.6% of respondents recognizing this aspect most highly. Analysis of the survey data indicates that while awareness of the principles of unity of knowledge and action and harmony between heaven and humanity is relatively lower, the dissemination and engagement with traditional culture via new media platforms among surveyed university faculty and students has resulted in overall recognition rates exceeding 60% for traditional culture and its spiritual essence. This shows that new media platform can be used to successfully transmit the traditional cultural spirit and give out positive results and also indicate the existence of a high level of comprehension within university communities.

Table 1: Teachers and students are aware of traditional cultural spirit

Options	Selection number	Proportion/%	Ranking
Love affair	820	82	6
Yiyong	859	85.9	4
Courtesy	912	91.2	2
Interconsciousness	758	75.8	9
Self-improvement	845	84.5	5
Goodwill	899	89.9	3
Self-care	916	91.6	1
National condition	773	77.3	8
Unity of heaven and man	659	65.9	10
Aesthetic humor	788	78.8	7

4.3.3 Impact on Teacher and Student Engagement

The research examines how university staff and students are involved with the process of distributing traditions through the cultural dissemination methods. As can be seen in Table 2, the findings of the questionnaire survey indicate that most people participate in these activities between 3 and 8 times a week with 85.6 percent of participants having this response. Precisely, 31.2 percent of the participants attend 5-6 times per week and just 3.7 percent of the population reports that they do not attend any of the activities weekly. The total comparison of the individuals shows that those who participate actively (5 times or more) make up 56.70. It means that traditional cultural content distribution with new media platforms makes certain university faculty and students to actively participate in different traditional cultural activities. Participation rate of university faculty and students on average is quite acceptable. Alternatively, the transmission of tradition culture through new media platforms has a strong effect on how often university faculty and students partake in traditional cultural activities.

Table 2: The degree of participation

Frequency	0	1~2	3~4	5~6	7~8	Greater than or equal to 9 times
Selection number	37	84	289	312	255	23
Proportion/%	3.7	8.4	28.9	31.2	25.5	2.3

4.3.4 Satisfaction Levels of Faculty and Students Regarding Cultural Transmission

Table 3 and Table 4 reflect the levels of satisfaction with the effectiveness of traditional cultural dissemination and the levels of satisfaction with dissemination platforms. In regard to the effectiveness of dissemination, most of the faculty and students who were surveyed indicated high levels of satisfaction, which means that the new media cultural dissemination platforms have significant reach in terms of timeliness, convenience, and coverage, and more than 80 percent of respondents stated that they were satisfied. Concerning the dissemination of content, these platforms naturally include both recipients and disseminators, which may overlap since it is an open online environment. Considering the interests and informational requests of university faculty and students, the suggested content will typically satisfy the majority of the users who require traditional cultural information. As a result, some of the respondents were satisfied with the content. Concerning the methods of dissemination, although more than half of the respondents were satisfied, the level was significantly lower than the one of the satisfaction with the effectiveness of dissemination and the content.

In the satisfaction survey regarding traditional cultural dissemination platforms, WeChat emerged as the most widely adopted channel among new media platforms, earning recognition from the majority of university faculty and students with a satisfaction rate of 88.4%. Satisfaction levels for platforms like Weibo, short videos, or web pages/forums were comparatively lower than that of WeChat. Based on the analysis of satisfaction with dissemination methods, although WeChat is the internet social platform with the broadest audience reach, its influence extends more extensively through communities or circles. However, official channels lack rigorous content review processes. In contrast, platforms like Weibo, short videos, or web pages/forums are fully open channels. Particularly for short video dissemination, each video requires review, and some content cannot be published. This can dampen the enthusiasm of disseminators. Consequently, the use of these channels in traditional cultural dissemination may slightly impact audience satisfaction levels.

Table 3: The survey of cultural communication satisfaction

Project		Be satisfied with	Satisfaction	General	Discontent	Disrelish
Propagation effect	Selection number	415	388	120	43	34
	Proportion/%	41.5	38.8	12.0	4.3	3.4
Propagation mode	Selection number	312	289	212	115	72
	Proportion/%	31.2	28.9	21.2	11.5	7.2
Propagation content	Selection number	376	354	112	85	73
	Proportion/%	37.6	35.4	11.2	8.5	7.3

Table 4: Platform satisfaction survey

Project		Be satisfied with	Satisfaction	General	Discontent	Disrelish
Wechat	Selection number	485	399	100	10	6
	Proportion/%	48.5	39.9	10.0	1.0	0.6
Micro blog	Selection number	305	281	205	102	107
	Proportion/%	30.5	28.1	20.5	10.2	10.7
Short frequency	Selection number	311	387	102	45	155
	Proportion/%	31.1	38.7	10.2	4.5	15.5
Web page/BBS	Selection number	289	227	212	151	121
	Proportion/%	28.9	22.7	21.2	15.1	12.1

4.4 User Experience Analysis

There are 14 elements in the user experience section of the questionnaire that are based on a Likert scale. The scale is a collection of statements and it has participants rate their level of agreement on a scale of 1 to 5 wherein 1 means a strong disagreement while 5 is a strong agreement.

Reliability analysis of data resulted in the reliability coefficient of 0.822, which is higher than the limit of 0.8. It means that the quality of reliability of the data used in the research satisfies the requirements and should be explored. The analysis of data validity indicated that all the values of commonalities were greater than 0.4, which indicated that the necessary research material has been successfully extracted. The overall analysis shows that the data can be characterized as having very good reliability and validity quality, thus making it useful to analyze it further.

The analysis of the results on the questionnaire of the participants shows the distribution of the sample data and descriptive statistics as presented in Figure 6 and Table 5, respectively. The figure codes A-N refer to the 14 dimensions of the indicators. In terms of interface experience, cultural aesthetics perception was fairly positive and traditional cultural resources were quite easy to comprehend. Yet, social connectivity and sense of belonging have room to be improved. Concerning the platform, its interface and willingness to use have been well recognized, and the average continuous usage intention score is 4.099. Thus, it may be stated that the new media cultural dissemination platform has some attractiveness to the intended audience, and its user experience is recognized by most of the sample participants. Separately analyzing functional modules: Interaction characteristics are natural, Content is helpful, Traditional cultural resources have high learnability, which increases the effectiveness of traditional cultural education. Regarding recommendation features: Content remains useful, recommended traditional cultural resources align well with individual users, and overall experience metrics are favorable.

Table 5: The user experience scale describes the statistics

Name	Basic index				
	Minimum value	Maximum value	Mean value	Standard deviation	Median
Recommended accuracy	3.000	5.000	3.975	0.688	4.000
Content diversity	3.000	5.000	4.001	0.618	4.000
Transparency and interpretability	3.000	5.000	3.908	0.687	4.000
Interface culture aesthetic perception	3.000	5.000	4.043	0.571	4.000
Interaction fluency	3.000	5.000	4.033	0.883	4.000
Personalized control	3.000	5.000	3.631	0.659	4.000
Cultural cognitive gain	3.000	5.000	3.957	0.724	4.000
Emotional resonance and identity	2.000	5.000	4.041	0.644	4.000
Social connections and belonging	3.000	5.000	3.765	0.746	4.000
Usability and learnability	3.000	5.000	4.004	0.758	4.000
Value perception	3.000	5.000	3.954	0.574	4.000
Aesthetic immersion	3.000	5.000	4.000	0.692	4.000
Authority	3.000	5.000	4.002	0.801	4.000
Continued use of will	3.000	5.000	4.099	0.682	4.000

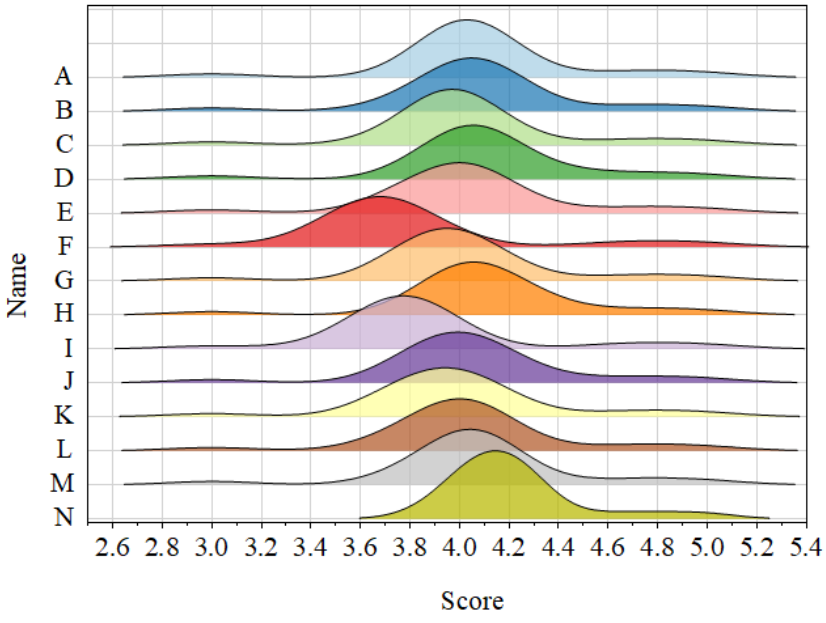

Figure 6: Sample size is distributed

5 Conclusion

This paper constructs a KGIP recommendation model integrating knowledge graphs and interest preferences, designs and implements a new media cultural resource dissemination

platform, and conducts an empirical analysis of the platform's impact on traditional cultural education.

A questionnaire survey was conducted to test and analyze the user experience and traditional cultural education effectiveness of the new media cultural resource dissemination platform. The platform's specific impact on traditional cultural education was investigated across four dimensions: cognitive level, spiritual and cultural level, participation level, and satisfaction level. Analysis revealed that the platform significantly enhanced the audience's understanding of traditional culture. Teachers and students also achieved positive self-development outcomes across different spiritual and cultural levels, with a notably high level of awareness regarding the spirit of prudence and self-reflection—91.6% of respondents selected this trait. Furthermore, the platform increased participation in traditional culture dissemination activities among university faculty and students, along with their satisfaction with such activities. It empowered users to have a stronger sense of cultural identity and to spread the traditional culture, which has helped promote positive results in traditional culture education.

The appearance and interaction experience of the new media cultural resource dissemination platform is overall positive. The mean value of user retention is 4.099 which means that the platform has achieved massive popularity and can be implemented over a wider time and space scale.

To sum up, The new media cultural resource distribution platform, which is based on the deep learning technology, changes the ways to spread Chinese traditional culture. Not only does it help develop traditional culture in new forms suitable to the modern age, but it also encourages the use of these platforms in the education sector, which can be regarded as a significant contribution to the cultural and educational fields.

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